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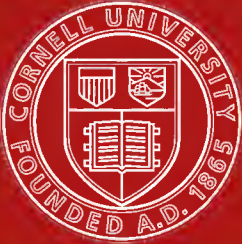
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# Electric Railway Transportation

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CONDUCTED BY FRANK D. WATSON

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PART ONE

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*Traffic and Financial Problems*



## THE URBAN TRANSPORTATION PROBLEM: A GENERAL DISCUSSION <sup>1</sup>

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BY BION J. ARNOLD,

Consulting Engineer, Chicago; Chairman of the Board of Supervising  
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A study of the transit facilities of the larger American cities, shows that while great advances have been made in the art of transportation, much remains to be accomplished. Nearly every city encounters a different traction problem, and many of them are pressing for some immediate solution. In the majority of cases, what is wanted is not only considerable improvement over present conditions, but also a program of development along technical, legal and financial lines which will result in a comprehensive transportation system suitable to meet constantly growing demands.

The term "comprehensive plan" is used so frequently that it may be worth while to define the conditions which such a plan should fulfil. In doing this, it will be discovered at once that there are many points of view, and equally as many opinions as to the relative importance of the elements which enter into the specifications for an ideal system of transportation. In considering the subject, the rights of the patron, the operator, the municipality, the property owner and the financier must each be recognized as well as the requirements for maximum economy.

*The patron* of the system believes he has a right to expect adequate services, consisting of plenty of cars provided with cross seats, comfortably heated in cold weather and well ventilated at all times. Every precaution should be adopted for his safety, and after safety and comfort has been secured, the maximum possible speed should be the next consideration. The rolling stock should be noiseless in operation, and the track, special work and car equipment should be built for easy riding. Through riding from point of starting to point of destination is desirable, but if this is possible, the patron

<sup>1</sup>This paper is one chapter of a report recently prepared by Mr. Arnold for the city of Pittsburgh, Pa., upon the traffic conditions of that city,—[EDITORS.]



has a right to expect universal transfers and one fare for the entire system.

*The operator* of the system can secure the best results if the equipment is efficient and up-to-date, if the construction has been sufficiently substantial to reduce maintenance to the most economical point, if the track and paving have been built so as not to encourage vehicles to follow the rail, and if street traffic is so regulated that the surface cars will have the right of way, particularly during the rush hours.

The most favorable conditions for operation exist when the peak loads are not excessive, when there is a large amount of all day travel, when the flow of traffic is not all one way so that the cars may be evenly filled in both directions, and when the profit of the short haul business more than offsets the losses from the long hauls.

*The City* is best served if the passengers are collected and delivered convenient to places of business; and the system should carry passengers to the outlying districts in the minimum of time and at the lowest cost, so as to reduce the tendency toward congestion in down-town districts. Rapid transit should be provided by well-ventilated subways or by means of roads in open cuts, or upon elevated structures designed to present an agreeable appearance and to operate with a minimum of noise. Suburban traffic should be handled by electrified terminal systems of the various steam roads so as to avoid smoke and gases. The street railway surface system should furnish and maintain the pavement between and adjacent to its tracks; and it should sprinkle the streets and reconstruct its roadbed whenever the streets are torn up for changes in grade, alterations in pavement, new sewers or water mains. Free transportation should be supplied to mail carriers, firemen, policemen and other city employees, and special low rates should be made for school children and workmen. Iron poles should be removed upon request and all transmission and feeder cables should be placed underground. In certain cities and in restricted districts of other cities the underground conduit system is insisted upon. The franchise should be indeterminate so that "franchise values" will be eliminated, and a system of supervising regulation should be established to insure that the citizens get their full measure of service.

*The real estate owner* and operator often insists upon the best

facilities being provided for his immediate district, even at the expense of the remainder of the city. The owner of property in the central part of the city will point out the advantages of confining the growth of the city by restricting non-paying extensions and by charging two or more fares to reach the outlying districts; while the development of the suburban districts and the building up of home communities inside the city limits depends largely upon extensions of rapid transit facilities and the maintaining of the universal five-cent fare.

*Financial requirements* will dictate that the rate of fare be sufficient to cover the expense of transportation, maintenance, reserve for depreciation and damages, as well as to pay interest charges and a fair return on the investment. If there be any surplus, the excess earnings should be devoted to better service and extensions, or it should be divided with the city in lieu of taxes, franchise payments or other civic burdens.

In considering rates, credit should be allowed for past burdens of non-paying years and for development expenses involved in creating, combining and building up the property and in bringing it to a paying basis. Extraordinary expenses should be amortized, and reserves for replacement of equipment, personal damages, fires and other contingencies should be provided.

*A broad economical policy* requires that the whole transportation system of a district should be controlled as if under one ownership, and that when one system of transportation more efficient than another can be provided, a transfer of passengers should be encouraged from the less to the more efficient system. Transportation in a city is a natural monopoly, therefore no district should be served with two competing transit systems when one can furnish better service than with the business divided.

The building of extensions into undeveloped districts should be assisted by assessment on the property benefited, and the operating loss on non-paying lines should be financed so as not be too heavy a burden upon the remainder of the system. As districts develop, the improvement of transit facilities should be somewhat in advance of the actual requirements.

*The problem*, therefore, is how to find an equitable balance between all these conditions. There is to be provided a maximum of safety, comfort, speed and capacity. Pavements are to be re-

paired, taxes are to be paid, all equipment must be thoroughly maintained and a reserve fund accumulated so as to keep the property abreast of all advances in the art. Separate systems must be controlled or combined to avoid wasteful competition and to secure the efficiency of a central management. Extensions must be made into promising territory. Rapid transit systems should be provided for and built in advance of immediate needs, and the losses during the first years of operation must be financed. If private capital is to be attracted for building the transit systems, a return on the investment somewhat larger than the current rates of interest should be allowed.

There are so many elements arising from local conditions that it would be impracticable to develop a formula that would be universally applicable, and while comparisons between different cities will be instructive, the solution of *any one problem* must be preceded by a study of the relative importance of its elements as determined by the special requirements of the given locality. In each case it is desirable to determine what constitutes a fair requirement as regards the following items:

1. Original investment.
2. Legal, technical and financial development expenses.
3. Working capital.
4. Adequate service.
5. Possible income.
6. Operating and maintenance expense.
7. Taxes and franchise payments.
8. Reserve funds for insurance, damages and depreciation.
9. Return on investment.
10. Provision for future extensions.
11. Facilities for rapid transit.

Transit facilities may be called the blood vessels of the city or district, and it is only by providing for unrestricted flow of traffic from any one district to every other district that we have the most favorable conditions for strength and growth. Hamper this free intercourse by poor transit facilities, and at once there is an arrested development. On the other hand, if facilities are extended too far and too fast, there follows a dissipation of strength. What is always wanted is to find an equitable balance, and then a constructive program which will *continuously maintain* this balance.



*Present Tendencies*

It may be of benefit to indicate briefly the present tendencies which are more or less marked in the movement for transit betterments. There is a decided tendency, for instance, toward recognizing the *actual investment required to provide adequate service*. This tendency is shown by the valuations of traction properties which are now under way by various authorities and by the studies that are being made by engineers to determine not only the first cost and the "cost to reproduce" certain properties, but the probable additional expenses which have been involved in building up the property and securing a good business. It is hard to see how the problem of reorganization and of rate making can be fairly handled without making a fair valuation of the reproduction cost, and, in some cases, of the depreciated or present value.

There appears to be a constantly growing sentiment in favor of building *extensions into new territory by means of assessment*; that is, charging the property benefited with at least the cost of the permanent way. This method of financing branch lines which will be operated at a loss for some time, has been worked out in Berlin in connection with the underground road, and petitions are now being signed in certain districts of New York which are likely to result in its adoption in this country.

There is also a gradual tendency toward a *higher standard of service*. Better lighted, better heated and more comfortable cars are in demand and a limit to the crowding allowed is resulting in more adequate service. While it is generally recognized in this country that a seat for every passenger is impracticable during rush hours, knowledge of the fact that such a policy is possible in foreign cities seems to justify the more insistent demands for more seats here at the time passengers wish to travel, although the enforcement of the policy abroad somewhat inconveniences passengers by causing them to wait longer for cars.

*Fares*

There has been some demand for *three-cent fares*, especially in the middle west, and experiments have recently been made to demonstrate the feasibility of the fare. The result, however, has been rather to prove that cheap fares and good service cannot be

secured at the same time, and the conclusion has been reached that, as a rule, the rider wants good service and is willing to pay reasonably for it.

On the other hand, the movement to *raise the city fare* above the five-cent limit has received little encouragement, and there seems to be no decided sentiment in this country in favor of the European zone system. It appears that a decided effort must be made to work out our transit system problems on a basis of a single five-cent fare for a ride in one general direction. And it will probably only be when failure to do this, due to excessive length of average haul, has been demonstrated, that it will be advisable to consider raising the fare above five cents. Then it will probably come in the form of making a small charge for certain transfers. In other words, of all the possible solutions, the augmenting of income by universally charging more than five cents for a ride within the city limits would appear to be one of the last suggestions to be considered.

An effort has been made in certain cases to increase income by *abolishing transfers*, but there is a question as to the benefits to be derived from such a course. The *abuse* of the transfer privilege should rather be eliminated. Its intelligent *use* always has been a logical and economical method of handling and increasing traffic. The tendency should be toward one comprehensive system with consistent facilities between the different branches. If the collection and distribution of passengers can be accomplished more conveniently and economically by means of the transfer than by means of the "*direct*" system, which often means the duplication of service, then the transfer system should have the preference.

When it is understood that the operating expenses per car mile are from three-quarters to one-half as much for a car in a subway or an elevated structure as upon the street surface, and that at the same time the subway or elevated car runs at fully double the speed and carries at least fifty per cent more seats, it will be seen that, as far as operating expenses are concerned, rapid transit subway and elevated lines have a great advantage. The problem is to *secure sufficient business* to run enough car miles over the more expensive structure so that the fixed charges *per car mile*, or seat mile, will not be excessive. As a rule, any subway or elevated system will not prove financially successful unless the traffic warrants

running during any year, car miles equal in amount to at least half the investment in dollars then in the property (that is, an investment of two dollars for each car mile on a yearly basis). Experience is gradually showing us that there are economical limits—both high and low—between which a certain density of traffic will justify a corresponding transportation system; beyond these limits some other system should be provided. For instance, in Boston, when the surface system became congested with traffic in the down-town districts, it was found more economical to transfer passengers to an elevated structure. In the course of time, as traffic increased, it was found desirable to extend the limits of the elevated road zone and to use subways. The same conclusions are being reached in Brooklyn, where, as in Boston, the elevated and surface roads are both under one management. In other words, a unit system of construction is naturally being developed together with a *zone system of operation rather than a zone system of fares*. But this is only possible when the entire transportation system is practically under one control.

#### *Short Haul and Density*

The fact that the operating expense per car mile of the surface lines is greater than the cost of operating a mile through a subway or on an elevated line, naturally leads to a more serious study of the possible economies in surface line operation. Progress in this direction shows a decided movement to reduce the relative weight of the car per seat, resulting in lower power costs and less annual cost of maintenance of roadway. At the same time, the income is being increased and conserved by the introduction of improved fare collecting systems. There remains to be devised, however, some system of operation on the surface lines for the handling of *short haul passengers in short haul cars*. There is a large profit in all of our cities from the short haul business. But as a rule, it is now being handled in cars which run practically to the end of the various lines so that much of the advantage of the short haul profits is offset by the expense of operating cars with empty seats in the outlying districts.

It must be recognized that there are two things which reduce the cost of transportation per passenger—one is density of traffic and the other, short haul. In Paris, the subway system is a paying investment, because the average haul is less than two miles and

the cars are operated over comparatively short lines. Universal free transfers are provided over the entire system but the lines are not physically connected and the densest traffic is handled by trains running over six miles, at the end of which distance they are looped back. On the other hand, the present subway in New York furnishes a continuous ride of seventeen and one half miles for one fare, while the average passenger travel is about five miles. Taking into consideration the relative purchasing value of money in New York and in Paris, a comparison of the two cities shows that in the Paris subway, the fare is equivalent to four cents for an average ride of two miles or at the rate of *two cents per mile*, while in New York, the fare is five cents for an average ride of five miles, or at the rate of *one cent per mile*. On a mile basis, therefore, New York gets its subway transportation at half the Paris rate, but the New Yorker travels more than twice as far on each ride as the Parisian, so that the average fare *per passenger* is greater in New York than in Paris. New York has the advantage of density of traffic; Paris has the advantage of short haul. New York should cultivate the short haul business in short haul cars as is done in Paris and thus enjoy the benefits of both elements—short haul and density of traffic—and thus be relieved of the present uncomfortable overcrowding in the short haul district which now seems necessary in order to secure the very long rides for a universal five-cent fare.

### *Taxes*

The question of taxation is being more carefully analyzed and it is recognized by some students of transportation problems, that perhaps the railroads have been called upon to carry more than their share of the tax burden. For a time, the only apparent method available for the people to get their share of the profits, often imaginary, derived from the railway business, was by means of taxes. Hence special taxes of various kinds were devised. But as logical methods of control and regulation are being introduced, and as the records of investment, earnings and operating expense are being more intelligently studied, this fact is becoming apparent—that there is very little surplus left for taxes, particularly for the payment of a franchise tax, if a company is to furnish adequate service, properly maintain its property, provide for depre-

ciation due to renewals and obsolescence and pay even a moderate return on the investment so that needed extensions may be financed.

As legislatures can establish commissions which have power to regulate service, control operation and fix rates, there apparently is nothing left, under such conditions, of what has been termed "franchise value." In fact the term "indeterminate franchise" implies this very feature. Now if there is no franchise value, there should be no tax upon it. The burden of maintaining pavement is an inheritance from horse car days, when the horses used in hauling the street cars, actually wore out the pavement between the rails. And there is justly a growing sentiment toward the removal of this burden, providing of course that the money saved to the railway company is diverted to furnishing better service or toward offsetting some of the other legitimate expense of transportation.

#### *Depreciation*

There is much discussion as to setting aside each year out of earnings, some definite amount to offset the depreciation of the property due to obsolescence and other causes; and it is generally conceded that *this is a duty and necessity that can be no longer neglected*. What should be done with the past obligations of this nature which have accumulated through years of development of poor business, is a problem which is receiving much consideration, but there hardly have been sufficient decisions reached to outline a final conclusion or even to indicate a decided tendency.

#### *Rate of Return*

It is certain, however, that as all these requirements of successful and growing transportation systems are being more thoroughly analyzed and understood, that there is being developed a conclusion that the profits from the transportation business are, as a rule, no longer excessive; and the removal of the idea that a franchise for a street railroad in a center of population is "as good as a gold mine" is having a good effect toward reaching a sane solution of transportation difficulties. Money actually used to produce a property should be assured a fair rate of interest, and if private capital is to be attracted, an additional profit over current interest rates must usually be allowed varying in proportion with the hazard of the enterprise. It must be admitted, however,

that under conditions where the enterprise has become established, the fair rate of return considered necessary is approaching nearer and nearer toward just the interest charge at current rates: and the surplus earnings are being called upon to satisfy the demands for extensions, for effective maintenance and for reserve to cover depreciation.

The rate of interest is being reduced in some places by raising money for rapid transit systems by means of city credit, but in these cases, the furnishing of the money required for equipment and for the operation of the system has been left to private capital. In other cases, as in Chicago, the actual investment in the surface street railway system has been determined by appraisal and an exact accounting of the expenditures for rehabilitation, betterments and extensions has been made. Thus in Chicago, on the total investment, there has been allowed a return of five per cent, plus a share of the profits, amounting to forty-five per cent of the net earnings, the other fifty-five per cent going to the city. In other cities where the relation between the investment and the return has not been so carefully determined, there is a tendency either to force a reduction of the rate of fare or to complain of the service rendered. It also must be recognized that if some method were available absolutely to keep the operation of the road "out of politics," there would be a decided tendency in some cities toward municipal ownership and municipal operation.

### *Conclusion*

It will be seen from the foregoing that any attempt to formulate decisions of a hasty or prejudicial nature would very likely fall far from the truth and that a coherent solution of the problem requires analysis from many viewpoints and by various minds.

*The patron* should learn to recognize that empty seats cost as much to operate as occupied seats, that a seat for every passenger during the rush hours must mean the curtailment of the service during the non-rush hours, and that new cars and new tracks cannot be furnished until old equipment has been in service a reasonable length of time.

*The operator* should adopt the policy of continually trying to please the public and should arrange his schedule and routes to accommodate the greatest number. If the best service can be

rendered by establishing through routes and giving transfers, these methods should be adopted in an effort to increase gross earnings by making it easy to ride. *It should be realized that publicity of intention and results is the best policy.*

*The City* should co-operate with the company on street traffic regulation, widening the streets where necessary and issuing permits for extensions and new connections which are absolutely necessary for the best routing system. Unnecessary taxes and the burden of pavement maintenance should be removed in the interest of allowing more money for better service.

*The property owner* should recognize that the general prosperity of the entire district is not only vital to him but to others, and that routes and extensions cannot be controlled for his particular benefit.

*The financier* must realize that the day for exploitation of established enterprises has passed, and that the fixed charges on such properties must be reduced to a fair return on the actual investment. New capital which is absolutely necessary for the continued life and usefulness of any public utility must be furnished, and this flow of new blood should be supplied in advance of actual needs, if it is to have a strengthening influence on the system.

*Economy* and a continuation of an equitable balance dictates efficient management, and the setting aside out of earnings each year, of a fund to provide for renewals.

## THE DECREASING FINANCIAL RETURNS UPON URBAN STREET RAILWAY PROPERTIES

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BY THOMAS CONWAY, JR., PH.D.,

Wharton School of Finance and Commerce, University of Pennsylvania.

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The electric railway properties of the United States constitute one of the most valuable assets of the nation. The rapid increase in mileage which followed the introduction and development of electricity, the success of these enterprises from a financial standpoint and the immense benefits which they have conferred upon the population tributary to them, have been some of the most notable achievements of the last two decades. The securities of these companies have become a favorite field for conservative investors. According to the last census enumeration, made in 1907, over \$3,774,000,000 of this class of securities were outstanding,—a sum exceeding in amount two-thirds of the investment in all forms of manufacturing property in the United States. This enormous volume of securities is owned by uncounted thousands of the most progressive and substantial people in the country.

There is no industry in which the public exhibit a livelier or keener interest. The intimate contact into which everyone is brought with these properties and the comparative simplicity of the business is probably responsible for this widespread interest and for the growth of the general belief that the public knows all about this business. There is, moreover, no industry in which the public plays so important a part in its affairs. Not only does it depend for its earnings upon the small contributions of many thousands of people, but its very existence is based upon franchises secured from the state and the municipalities.

The view which the public takes of any particular company, determines, to a large degree, the success or failure of that enterprise. If public sentiment is favorable and intelligent, this furnishes one of the greatest assurances of safety. If, on the other hand, public sentiment is hostile, the company finds at every step determined opposition thwarting or nullifying its efforts for improvement.



One of the most firmly fixed beliefs in the public mind is that the street railway industry is one of abnormally large profits, which, moreover, increase in arithmetical ratio with little or no effort on the part of the company. The basis for this widespread conclusion is not difficult to find. The history of every large urban system seems to substantiate this conclusion, for a cursory examination of a comparative table of earnings shows a rapid and uninterrupted growth in the net income of the companies, keeping pace with the growth in the size of the communities. These earnings have in most cases been made the basis of capital issues, the proceeds of which sometimes have not been used for the benefit of the property. Service has frequently been skimmed in order that dividends or interest might be paid upon these additional liabilities.

The people have seen merger succeeding merger, bringing an ever increasing load of fixed charges. They have come to believe that they are being needlessly taxed for a return upon a large part of the securities outstanding which represents no real investment. The basis of the agitation which exists in almost every city against the traction companies is founded, in other words, upon the belief that the traction companies are, without exception, grossly over-capitalized, and that this capitalization results in direct harm and disadvantage to the traveling public.

From this beginning, which it should be noted in fairness, is in most cases the result of the mistakes of a previous generation, has grown up a spirit of antagonism and disbelief in the honesty and good intentions of electric railway managers, which makes it very difficult, if not impossible, to secure a calm and unbiased judgment from the public upon any question of mutual interest. The people of our large cities have fallen into the habit of endeavoring by every means to expedite their selfish interests, believing that no matter how successful their efforts may be they will secure no more than their just share of the increment in earnings resulting from the growth in the cities.

This attitude on the part of the public is most unfortunate. The company can only secure justice if the public possesses a full understanding of the difficulties and limitations of the industry. It is most important that the public cease to turn a deaf ear to the statements of the companies, and that the companies on the other hand treat the public with the utmost frankness concerning matters

in which they have a legitimate interest. There is no matter in which it is more important that the public receive the fullest, frankest and most complete information than that concerning the earnings and financial problems of electric railway properties.

The urban street railway industry at the present time is facing a financial crisis. For some years it has been evident that the net earnings of these properties instead of increasing, as heretofore, with mathematical exactitude have remained almost stationary, or in some cases have actually declined, in spite of evidence that the communities are growing, and that the volume of traffic has largely increased. To electric railway managers and students of the electric railway business, the reasons for this condition are not difficult to ascertain. The public at large, most unfortunately, is totally ignorant of the existence of the situation.

The reasons for the diminishing returns upon urban street railway properties are: (1) the decrease in the average earnings per rider which has occurred, very materially reducing, or entirely offsetting, the increase in income which would be derived from the growth in traffic; and (2) the widespread, persistent and alarming increase in the cost of maintenance and operation, due largely to causes entirely beyond the control of the management. The companies, therefore, are caught between two dilemmas, both of which work to the same end.

The decrease in the average earnings per rider is the result of several important factors. The rapid growth in the size of our cities has had a profound influence upon the street railway industry. The larger city carries with it a longer average ride, which, so far as we can see, is bound to still further increase in succeeding years. Urban street railway fares in America bear no relation to the mileage traveled by the passenger. The rate of fare in most cities is fixed by the franchise ordinances at five cents for a continuous ride. As the length of the ride increases, the rate of fare per mile naturally decreases. Unless this decreased charge can be offset by economies in operation, it is obvious that the companies are bound to lose with a continued growth in the area of our cities.

The remarkable change in the character of the business districts of our large cities has also had an unfortunate effect upon the companies. The retail shopping districts, the hotel centers, the financial districts and the location of places of amusement have

been concentrated within a small area. This has necessitated a remarkable centralization of traffic by the transportation systems to cater to the public. Branch lines have been gathered in from all points and concentrated upon a few main traffic streets, which have, in consequence, become seriously congested. This congestion has necessitated slower schedules involving a heavier platform expense, that is, a larger cost for the wages of motormen and conductors, for each car mile operated, and, because of the greater length of time required to travel a given distance, has necessitated a larger investment for equipment, in proportion to the number of passengers which can be carried.

The extreme congestion on streets, crowded with vehicular and pedestrian traffic, has brought about an increase in the number and cost of accidents. The number of persons killed increased ninety-seven per cent between 1902 and 1907, while the number of injured more than doubled during the same period. The expenditures of the street railway companies for damages have increased from \$9,935,545 in 1902 to \$18,176,305 in 1907, or a gain of 93.5 per cent. This increase, in itself, ate up almost one-half of the total growth in net earnings from operation, less fixed charges, during the period.

These serious limitations upon the capacity of the surface lines of our large cities have been responsible for the remarkable growth in the demand for improved methods of transportation, such as elevated and subway lines. The disadvantages of elevated lines to the people living along the streets occupied by them have concentrated the demand largely in the direction of the subway. With the exception of Philadelphia and Brooklyn, no private company has been able to secure money for the construction of subway lines. Their enormous cost, exceeding \$2,000,000 per mile, requires a volume of traffic so large as to make the scheme impracticable under most conditions.

In spite of the growth in the size of the cities and the total volume of traffic naturally handled by the companies, the urban systems have been forced to continue the operation of a large percentage of lines which are both directly and relatively unprofitable. It is a public duty of a transportation company to provide new facilities in advance of the growth of a city, in order that new sections may be opened up and the territory provided for additional population. When, however, a large proportion of lines continue for years to be

unprofitable, and when by no reasonable estimate can it be demonstrated that a goodly number will ever be directly profitable, it follows that due consideration must be given to the company in order that it may be able to earn a surplus on one part of the system sufficient to offset the deficit on other parts.

The average layman has no conception of the number of lines which are unprofitable in our large cities. The audit of the public accountants, employed by the city comptroller of Philadelphia, of the accounts of the Philadelphia Rapid Transit Company, showed that in 1909, twenty-four lines, or twenty-six per cent of the total number of lines operated, were run at a profit, while sixty-eight lines, or seventy-four per cent of the total, were operated at a loss. In other words, upon the basis of the calculation adopted by the accountants, which involved an apportionment of the total expense, including the fixed charges of the entire system, according to a car mileage basis, over two-thirds of the lines comprising the system were unprofitable.

The most important factor, however, in decreasing the earnings of our urban street railway systems has been the steady and alarming decline in the average fare per passenger carried, due to the rapid growth in the use of the transfer. It is conceded by street railway operators that the transfer has played a large and important part in the remarkable growth in the business of these companies. Through this agency hundreds of thousands of rides per year have been stimulated which would otherwise never have been taken.

The transfer has made possible the more economical operation of city systems by providing a large car mileage upon the main, or trunk lines, radiating from the business center, from which passengers were transferred to a smaller number of cars on the cross-town, or branch lines, tapping the residential districts. If the companies had been required to operate a through service to every point in the city, the congestion in the business district would either have been rendered intolerable, or the service in the residential districts would have been woefully deficient.

Realizing these advantages, the managements of many large city companies have liberally extended the transfer privilege throughout all sections of the city. The growth in the number of transfer points from year to year was rapid, and the invitation thus extended was soon taken advantage of by the riding public. Within the last few years, however, the growth in the use of the transfer, as compared

with the cash fares paid, has been so rapid as to exercise a most demoralizing effect upon the earnings of our city systems. Ample evidence is at hand to show the importance of this movement. The following table illustrates the growth in the transfer habit on the Chicago street railways over a period of twenty-five years:

	1884.	1904.	1909.
Number of distinct routes operated	19	182	?
Number of transfer points .....	2	94	?
Average number of transfer passengers carried daily .....	4,000	207,728	315,955
Percentage of transfer passengers to revenue passengers .....	4.6	50.7	58.6
Average fare per passenger (cash and transfer passenger) .....	4.78 cents.	3.13 cents.	2.95 cents.

The same general movement is illustrated by the statistics of operation of the Brooklyn Rapid Transit Company, operating the major portion of the street railways in the city of Brooklyn. The actual and relative use of transfers from 1899 to 1907 is shown by the following table:

Year.	Passenger receipts.	No. passengers at 5 cents each.	No. transfers received.	Per cent. transfer to cash passengers.
1899 .....	\$10,058,343.83	201,166,876	41,893,744	20.82
1900 .....	11,206,715.01	224,134,320	42,051,904	18.7
1901 .....	11,718,942.39	234,378,848	56,140,101	23.95
1902 .....	12,321,264.60	246,425,292	50,883,702	20.65
1903 .....	13,086,840.14	261,376,802	53,436,921	20.41
1904 .....	14,429,546.04	288,590,920	56,804,382	19.68
1905 .....	15,649,400.80	312,988,016	70,073,877	22.38
1906 .....	17,586,721.57	351,734,430	96,455,314	27.4
1907 .....	18,401,174.96	368,023,498	136,240,669	37.

This alarming growth, especially in the last three years covered by the enumeration, during which the use of transfers almost doubled while the revenue passenger traffic increased less than twenty per cent, has caused much serious thought.

Most convincing evidence upon this point is furnished by a statement of the receivers of the New York City Railway and of the Third Avenue Railroad system, made to the United States Circuit Court for the Southern District of New York, praying for the abolition of a large number of transfer points in the city of

New York. The figures compiled by the general manager for the receivers of the New York City Railway showed the following remarkable growth in the transfer habit and the consequent decline in the average fare per passenger carried from 1888 to 1907:

Year ended	Revenue passengers.	Transfer passengers.	% Trans. pass. to rev. pass.	Average fare, cents.
September 30, 1888 . . . .	193,935,484	1,996,871	1.10	4.94
September 30, 1889 . . . .	205,286,126	2,253,101	1.11	4.92
June 30, 1890 . . . . .	215,235,832	2,578,701	1.12	4.94
June 30, 1891 . . . . .	223,420,632	2,826,628	1.27	4.94
June 30, 1892 . . . . .	230,221,158	2,723,898	1.18	4.94
June 30, 1893 . . . . .	236,099,569	3,203,832	1.36	4.93
June 30, 1894 . . . . .	236,012,459	5,306,645	2.25	4.69
June 30, 1895 . . . . .	252,496,016	12,769,810	5.06	4.76
June 30, 1896 . . . . .	288,468,143	47,339,246	16.42	4.29
June 30, 1897 . . . . .	291,989,549	93,108,281	31.89	3.79
June 30, 1898 . . . . .	305,115,538	124,114,348	40.68	3.55
June 30, 1899 . . . . .	343,559,120	149,083,269	43.40	3.49
June 30, 1900 . . . . .	360,002,672	173,089,442	48.08	3.38
June 30, 1901 . . . . .	365,124,079	185,486,356	50.81	3.39
June 30, 1902 . . . . .	382,266,904	154,963,644	40.55	3.60
June 30, 1903 . . . . .	396,245,922	158,526,750	40.03	3.56
June 30, 1904 . . . . .	389,608,537	168,267,818	43.19	3.48
June 30, 1905 . . . . .	374,258,395	168,957,760	45.14	3.44
June 30, 1906 . . . . .	391,354,877	178,639,866	45.65	3.43
June 30, 1907 . . . . .	376,629,571	194,765,342	51.71	3.29
Six months ended De- cember 31, 1907 . .	189,205,244	104,304,715	55.13	3.16

Nor did the statistics chronicled for the six months ended December 31, 1907, end the decline in the average rate of fare. During the seventy days preceding April 11, 1908, when transfers were discontinued, under an order of the court already referred to, with the main part of the Third Avenue system, the average was 3.09 cents per passenger.

On September 24, 1907, however, the New York City Railway Company, the lessee of the Metropolitan Street Railway Company, had been forced into bankruptcy. The receivership was extended to the Metropolitan Company on October 1, 1907. There can be no doubt that the financial embarrassment of these companies was largely the result of the heavy decline in the average rate of fare through the operation of the transfer system.

Illustrations might be multiplied indefinitely. It is generally conceded, however, that the same development has occurred in every large city in the country.

Much has been said and written concerning three-cent fares. The average layman does not understand that in most cities there exists at the present time an average rate of fare but little above this figure for *each ride* furnished by the transportation company. The efforts of city councils and of public commissions to reduce the legal rate of fare has been generally abortive because of the protection contained in the companies franchises. The desired result, however, has been, in reality, secured as a result of the operation of the transfer system, which has brought about a condition in many of our large cities where one-half of the riding population is paying an average rate of fare but little above 2½ cents for each ride taken.

The following comparison, made in 1908, by the special committee of Philadelphia City Councils, created to investigate street railway conditions in other cities, shows how general this movement has become :

	Average fare per passengers carried.
Pittsburgh .....	4.31 cents.
Cincinnati .....	3.68 "
Milwaukee .....	3.19 "
Detroit .....	4.33 "
Buffalo .....	3.2 "
Boston .....	3.15 "
Philadelphia .....	3.57 "

The public is inclined to regard a reduction of a fraction of a cent in the average rate of fare per passenger as a small matter. They forget that this small sum, if multiplied several hundred million times, representing the total number of passengers carried, runs into a vast sum of money in a year. We can easily understand the perturbation which a fractional decline causes in the minds of street railway officials and financiers, if we analyze the distribution which is made of every fare taken in by the conductors.

It is universally admitted that, at the present time, the lines in Chicago are not over-capitalized, but that, on the contrary, every cent of capitalization is represented by an equivalent value of useful property. It is conceded that these properties are in excellent phys-

ical condition and that they are operated with great ability and economy.

The "Board of Supervising Engineers, Chicago Traction," makes the following analysis of the operations of the Chicago City Railway Company for the year ending January 31, 1909:

Average gross earnings per passenger (cents) .....	2.95
Average expenses per passenger (including 5 per cent interest on agreed valuation of property) (cents) .....	2.53
	<hr/>
Average profit per passenger (mills) .....	0.42
	<hr/>
City's proportion (55 per cent of profit per passenger) (mills) .....	0.23
Company's proportion (45 per cent of profit per passenger) (mills) ....	0.19

In other words, upon this great system, conservatively capitalized, efficiently managed and in the pink of physical condition, there remained only forty-two one-hundredths of a cent out of every average fare for division between the city and the stockholders of the company. The average rate of fare has declined eighteen one-hundredths of a cent during the last five years.

It is recognized that the street railway companies in Boston are also conservatively capitalized and efficiently operated. The following analysis of the distribution of each five-cent fare, prepared from the report of the Boston Elevated Railway Company for the year ending September 30, 1909, is illuminating in this connection:

	Cents.
General expenses, including insurance, pensions, etc. ....	0.223
Cost of power .....	0.422
Wages and conducting transportation .....	1.340
Other transportation expenses .....	0.128
Maintenance of way .....	0.488
Maintenance of equipment .....	0.360
Depreciation .....	0.069
Damages and legal expenses .....	0.291
Taxes .....	0.367
Rental subways and tunnels .....	0.171
Interest .....	0.365
Rentals surface lines ...	0.486
Dividends .....	0.277
Surplus .....	0.013
	<hr/>
	5.000



It will be seen that only twenty-nine one-hundredths of a cent, or 5.8 per cent of each nickel, represents profit out of which dividends can be paid.

There is no other business of high repute with investors with such a slight margin of profit. No wonder that street railway managers view the decline in the average rate of fare with each succeeding year, through the operation of the transfer system, with so much concern. They realize that either the decline must be checked or corresponding reductions made in the cost of operation, if that be possible.

I believe it is generally admitted that the transfer problem is one of the most serious questions confronting street railway managers at the present time. The complete abolition of the transfer system would disorganize our street railway systems and work havoc with the present distribution of urban population. The consensus of opinion supports the conclusion that, in addition, it would spell bankruptcy for the companies involved. On the other hand, to anyone who has even casually studied the question it is apparent that drastic steps must be taken to limit the growth in the transfer habit in order that the company may be in possession of sufficient revenue properly to meet its expenses.

Evidence is at hand in every city of the flagrant abuses of the transfer privilege through sale or gift of transfers to those having no legal right to receive them. Co-operation between the public authorities, the riding public and the street railway companies would practically eliminate this abuse. The public interest clearly points to cordial co-operation in this effort, for it is obvious that every illegal ride must really be paid for by those making proper use of the transfer or paying a cash fare. Even, however, if the abuse of the transfer privilege were eradicated, it seems obvious that some radical revision in the transfer system will shortly be necessary.

The same rate of growth in the use of transfers which has prevailed in the last ten years, if continued, would have increased the percentage of transfer passengers in New York to seventy-six per cent of the revenue passengers by the expiration of the next decade. Even the most radical anti-railway man will recognize that operation, according to present standards, would be impossible under such conditions. The company's very existence depended upon de-

vising some system which would prevent a further reduction in the average rate of fare.

The relief granted to the afflicted Metropolitan Street Railway Company by the order of the United States Court, abolishing a large number of transfer points, caused an immediate rebound in the average earnings per passenger, furnishing conclusive proof of the accuracy of the diagnosis which credited a considerable share of the financial misfortunes of the company to the transfer system. From April 11, 1908, when the order went into effect, the average rate of fare rose from 3.09 cents per passenger to 3.40 cents in the year ended December 31, 1909,—a gain of 0.31 cents or 10.3 per cent. What this meant to the company can be easily understood. Had the rate of 1909 been in force in 1907 the earnings of the company would have been increased, from this source alone, \$628,446.50, which sum would have been sufficient to meet the fixed charges on thirty per cent of the total bonded debt of the company.

Many solutions of the problem have been offered. The zone system, which is so extensively employed in Europe, finds many supporters who contend that it is the only logical solution of the difficulty, because, with the increase in the size of the city and the consequent lengthening of the ride, the company must make provision to charge according to the journey taken, rather than upon the basis of a flat fare. There is much force in this argument, and were it not for the franchise stipulations in most cities, it is altogether likely that this solution would in time be extensively employed. Many other solutions have been strongly urged.

In some quarters it is believed that the entire transfer system should be reorganized, that the rate of fare for a single ride should be reduced to four cents, through the sale of six for twenty-five cent tickets, or some other method, and that those desiring to transfer should pay an additional cent for the privilege. The arguments in favor of such an arrangement are strong and logical. The company, in the first place, will probably not profit much by the change because the concession in the straight fare will offset the gain through the sale of the transfer, and thus keep the average rate of fare at approximately the present point. Second, the sale of tickets will diminish the time consumed in the collection of fares, and will thus expedite the loading of prepayment cars, which have come to be recognized as an essential part of the equipment of a

city street railway. Third, the charge for the transfer will eliminate the wholesale demand for this privilege which lies at the root of the many abuses which have grown up. Fourth, this arrangement is much more logical than the present plan, because it only requires the passenger to pay for that which he is to receive.

At the present time, taking the country as a whole, one out of every five riders uses a transfer. The operation of the line to which the transfer is given is as expensive as the lines upon which the cash fare is paid. The transfer passenger really secures two rides for five cents, or an average rate of fare of  $2\frac{1}{2}$  cents for each ride taken. It is obvious that if all passengers were carried on this basis, our systems would be tremendously unprofitable. It, therefore, follows that the four riders, who do not use the transfer, in reality pay a part of the fare of the fifth man who desires this privilege. This arrangement is illogical and inequitable.

It should be noted, however, that unfortunately the solution of the transfer difficulty is much complicated by the unwise franchise provisions prevailing in many cities. A most serious defect in the franchise settlement in Chicago in 1907, in the opinion of many well-informed persons, is the clause imposing upon the company the duty of giving universal free transfers. In many cities, such as New York, the giving of transfers under stated conditions is made obligatory by state legislation. In other cases special privileges, such as franchises for certain lines, are conditioned upon the granting of transfers over stated lines.

Under these conditions it is impossible to lay down any general rule, even could it be demonstrated that any solution possesses the largest number of advantages. Two effects, however, stand out as indisputable; First, that the street railways companies, through the operation of the transfer, are suffering a rapid and alarming decline in the rate of fare per passenger carried, which, unless checked, will bring financial disaster; and second, that the first step in finding a solution of the difficulty is the education of the public to the nature, extent and effect of the transfer problem, in order that their co-operation may be secured in working out a satisfactory solution.

We turn now to an examination of the trend of operating expenses of the urban companies during the last few years. Throughout our analysis of the transfer problem we have assumed that operating expenses had remained stationary and that the reduction

in the average revenue per passenger could not be offset by corresponding economies. As a matter of fact the cost of living of street railway companies has rapidly increased, probably to a greater extent than that of the private citizen. Every item entering into the cost of operation has shown a persistent and steady increase, both actually and relatively.

The operating ratio, or a comparison of the percentage ratio of operating expenses to operating earnings, has increased from 57.7 per cent to 60.1 per cent from 1902 to 1907. In the case of the large companies having a capitalization of \$1,000,000 or over, which includes all of the large city companies, the ratio has increased during these five years from 54.8 per cent. to 58.4 per cent.

There is no more striking illustration of the increased expenses of electric railway properties than that furnished by a comparison of the cost of materials and supplies in general use. The United States Bureau of Labor reports that the average wholesale prices of street railway materials and supplies, as evidenced by operating expenses, less wages and salaries, increased from approximately 4.7 cents per car mile in 1902 to 6.2 cents per car mile in 1907, or from approximately 21.9 per cent to 24 per cent of the gross earnings.

The Philadelphia Rapid Transit Company reports the following increase in the cost of some of the most important items comprising the equipment of a street railway:

	1895.	1910.	Per cent. of 1895 price.
Ninety pound girder rail now 141 pound rail...	\$25.00	\$38.20	239
Switches .....	122.50	150.00	123
Frogs .....	83.00	97.50	117
Ties .....	.50	.65	130
Cars .....	27.50	55.00	200
Coal, per ton .....	1.72	2.30	133
Car wheels (cast iron to steel) .....	4.00	18.00	450
Wages—motormen and conductors.....	.21	.22	105

It will be noticed that, without exception, the prices of every important portion of the physical paraphernalia of the street railway has shown a very large increase. The total average increase in the price of the items enumerated is eighty-seven per cent.

The cost of maintaining equipment has steadily grown in spite of the fact that the use of better materials, more scientifically con-

structed apparatus, and better shop methods have made for reductions. The growth in this item of expenditure has been due almost entirely to the rapid increase in the wages of skilled workers which has attended all forms of industry, including the electric railways.

The largest item in the expenditures of electric railways is for wages and the expenses of conducting transportation. The census enumeration discloses the fact that the wages per employee has increased from \$605 per year in 1902 to \$658 in 1907, or an increase of 8 per cent. Apportioning these wages upon a car mile basis we find that the increase has been from 7.1 cents to 8.5 cents during the period. Had it not been for the fact that the electric railways were able, to some extent, to offset this increase by the use of larger cars, thus increasing the number of fares which can be handled in a day by a given car crew, it is evident that serious difficulties would have been encountered from this source. It must be evident, however, that the possibilities of continuing these economies are now much restricted. The size of our cars has perhaps reached the maximum for safety; especially when operated over the narrow streets of many of our large cities.

Actuated by a desire to give the public larger, stancher and higher-speed equipment, electric railways within the last few years have greatly improved the technical standards of street cars. These improvements have involved, in most cases, the doubling of the cost of the car and have, in addition, required a much larger consumption of power for its operation. The single truck car of 1900 weighed, on the average, about 550 pounds per passenger seat. The double truck pay-as-you-enter motor car of 1909 weighed approximately 1,300 pounds per seat—an increase of 100 per cent in weight in nine years. The cost of transporting this increased weight has been estimated by competent engineers to be from six to ten cents per pound per year, or a total increase per passenger seat of from \$39 to \$65 per annum.

The cost of maintenance as a whole has increased not only because of the higher standards required and the higher prices of materials and wages, but also as a result of the differences in the methods employed in accounting for many items of expenditure.

Up until within recent years it was a very common practice to charge a large part of the cost of renewals to the capital account. In most cities this is no longer possible, for either municipal ordi-

nances, orders of state commissions, or the demands of investors require that renewals shall be charged to operation, or shall be taken care of through a depreciation fund. The advent of depreciation into the electric railway field, which has been postponed until within recent years, carries with it many serious problems. This question is ably discussed in the paper by Mr. W. B. Jackson, pages 31 to 42 of this volume.

It is evident that the requirements of the public authorities, and of a logical system of management of the income account, makes it obligatory upon the electric railways to provide out of earnings a fund from which renewals due to obsolescence and decrepitude can be made. The problem of public regulation opens up other questions of a financial nature.

A large number of the recent mortgages contain provisions for the amortization of tangible capital, in whole or in part, through the operation of a sinking fund, or the serial retirement of the bonds. This requirement is found not only in those cities where limited term franchises are in force, but has been adopted in many sections where the corporation possesses perpetual franchises.

In cases where the company is in possession of a limited term franchise, prudence requires that some provision shall also be made for the amortization of intangible capital. The amount represented by the discount of bonds sold, the expenditures for organization, the cost of securing franchises, the profits of promoters and the outlays for interest and taxes during the construction period, must all be returned from the earnings of the property during the life of the franchise. Particular stress is being laid by financiers, at the present time, upon this matter. It is only recently that it has come to be generally recognized that a corporation should be allowed and required to take out of its profits funds to provide for the amortization of intangible property when operated under term franchises. This expense represents legitimate expenditures made by the promoters of these enterprises in order to effect the construction of the property. Justice demands that these sums be returned to them before the expiration of their franchise grants. The burden must, of course, ultimately fall upon the riding public which furnishes the revenue of the company.

The increased expenditures of urban railways for the settlement of damage claims has already been alluded to in another connection.

It seems inevitable that this tendency is a permanent one, because with the growth in the population of our large cities, and the consequent increase in pedestrian and vehicular traffic upon the streets, the liability to accident must constantly increase.

Even the administrative expenses have shown the same general tendency. The salaries of officers and clerks, according to the last special census report, rose from \$1,040 in 1902 to \$1,100 in 1907, an increase of five per cent.

Such a survey of the increases in the elements comprising the total expenses of electric railway systems is most illuminating, for it shows the reasons for the failure of the companies to largely increase their profits through the growth in their traffic. Had the various items of cost remained stationary, it is inevitable that our city systems would have shown a large growth in net earnings during the last decade. The truth is that the increases in the cost of labor, materials, equipment and supplies have in most cases more than offset the growth in earnings which would have been possible through the use of larger cars, the greater volume of traffic, more economical apparatus and better operating methods.

The reduction in the rate of fare would not perhaps have been a serious matter could there have been corresponding economies made in the expenses of operation. In spite of the most heroic efforts, railway officials have been unable to reduce expenses, because of circumstances entirely beyond their control, while the reduction in income per passenger carried has gone steadily forward.

The conclusion to be drawn from this comparison at first glance would seem to be that the securities of our large urban street railway systems, and of the electric railways in general, are coming to be undesirable investments. This conclusion is only tenable if it is granted that no remedy can be found. It is immediately apparent that the suburban and interurban properties have it within their power, in most cases, to readjust their rates so as to continue the operation of the road upon a profitable basis. The danger lies in the peculiarly anomalous position of the city systems, whose hands are tied both by the provisions of fundamental ordinances and by an unsympathetic public sentiment. It seems fair to conclude, therefore, that this problem is a serious one only in the case of the urban properties.

The remedy for the situation, in the case of the city system, is

clearly apparent. The increase in the cost of wages, equipment and materials is a matter over which the street railway companies have little or no control and which must be faced by them as by every other form of industry. The solution must be found in the readjustment of the average fare per passenger carried upon a basis which will remove the danger and accord satisfactory financial conditions.

Electric railway managers are giving thoughtful study to the matter, and it is certain that a satisfactory solution can be found, provided the public can be made to understand the situation which confronts these properties, and the justness of the proposals. A campaign of publicity for the prevention of the abuse of the transfer privilege has been prosecuted in many cities, generally with considerable success. A scientific study of the conditions of operation in each large city will doubtless disclose many methods by which transfer abuses may be curtailed or eradicated. It may be found expedient to abolish a considerable number of transfer points or to eliminate them by rerouting car lines. It is too early to predict what form the solution will ultimately take. The first step in solving the difficulty, however, must be a clear and frank explanation of the matter to the public, in order that they may see the justice of the street railways' efforts to correct abuses, and may give the corrective program the support of public opinion, without which it is doomed to failure.



## THE DEPRECIATION PROBLEM

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In considering "The Depreciation Problem" it is essential to clearly understand what the word depreciation actually represents. There is no universally accepted definition of the term, so far as the writer knows, though the importance of depreciation as a factor in the operating costs of electric railroads has been recognized by most writers on the subject of railroad finance and by the commissions having to do with railroad questions. In its more important features, in consequence, there has come to be a generally accepted consensus of opinion as to what depreciation means.

Every part of a properly constructed and well-equipped electric railway can be maintained in good operative condition by current repairs for a period of years; but the time comes with every building and unit of equipment when it, like a suit of clothes, can no longer be kept serviceable by repairs or current maintenance, and when it must consequently be replaced substantially in its entirety. It will thus be seen that two elements enter into the maintenance cost of the unit: One, the current maintenance or repair expense required to maintain it in condition suitable for service, and the other the cost of replacing or renewing it at the end of its useful life. The latter entails the necessity of accumulating, during the life of the unit, sufficient funds to replace it when it must go out of service. Expenditures for current maintenance are naturally distributed more or less uniformly throughout the life of the part, in accordance with the needs for repairs, while the expenditure made necessary by depreciation must all be met at the end of the useful life of the unit, and is, therefore, often designated as deferred maintenance. Depreciation results from this quality, found in most parts of electric railway plants, which limits their useful lives and makes their ultimate replacement, as a whole, necessary notwithstanding that current repairs may have been well attended to.

The length of useful life of a unit is determined by one, or

both, of two factors: First, the inherent quality of most physical property to deteriorate, on account of the effects of use and of the elements, to a point where it cannot be longer economically maintained in satisfactory operative condition by ordinary repairs—that is, a unit ultimately reaches a point of “decrepitude” when it is either impossible to keep it in satisfactory operative condition by current repairs, or the cost for such repairs becomes so great that it is more economical to replace the old unit by a new one. Second, the effects of changes in the art whereby the character of the service required is so changed, or the efficiency of apparatus for providing corresponding service is so improved, that a plant still physically capable of doing the work for which it was designed is no longer able to economically provide the service required, and it is, therefore, obsolete. This second factor is well designated “obsolescence.”

A third division called “inadequacy” is sometimes considered in estimating depreciation. This is intended to cover the effect upon the useful life of apparatus or plant of expansion in business whereby otherwise serviceable apparatus is outgrown and must be replaced by larger apparatus. The writer does not consider such a division necessary, for any effect caused by inadequacy which can be estimated may properly be considered under “obsolescence.”

These principles apply simply and perfectly in practice. Let us take, for example, a new electric railway and consider for a moment the rails and their fastenings. Current maintenance will keep these in good operative condition for, say, an average of seventeen years on the straight track, and for an average of five years on the curves. This will be accomplished by the usual track gangs, which will keep the track in alignment, raise low joints when they occur, replace a defective rail as occasion requires, etc. But after a period of years the track gang can no longer keep the rails so that they are safe or suitable for service, and then large sections of track must be replaced as units, for which relatively large expenditures must be made. Such expenditures cannot be provided for in the same manner as expenditures for current repairs. The latter are distributed with reasonable uniformity year by year, and may be cared for from current earnings, but the former are of only periodic occurrence, and require relatively large expenditures of accumulated funds.

These renewals cannot appropriately be paid for from funds charged to capital account, for that would have the ultimate effect of piling up unending capital with only one set of rails to show for it, nor can they appropriately be paid for by the company's notes to be liquidated during the life of the new rails, except under emergency conditions or in case the company had accumulated assets for the specific purpose of carrying such notes, for this would keep the company loaded with floating indebtedness which, when paid, would only have to be renewed when another set of rails was required. The company should accumulate funds during the life of the rails for the express purpose of providing for their replacement at the end of their useful life. The only way to be reasonably assured of having such funds when required is to estimate, when the rails go into use, the average years of service to be expected from them and the net cost of their renewal, and then distribute the charge for their replacement over the estimated useful life. And thereby the annual depreciation of the rails is obtained.

By the same process the requirements for depreciation of each kind of plant in a property may be estimated and the average amount per annum that must be appropriated to care for depreciation or replacements for each kind of plant may be determined. With possession of this information, it is merely a matter of taking the aggregate of these amounts to obtain the annual appropriation to the depreciation account required for the entire property. A knowledge of this amount places the management of an electric railway company in position to have the books of their company so organized that the accounts will show, month by month and year by year, the amount of appropriation required for depreciation and the amounts of the appropriations actually made for the purpose, together with the amount of the fund that should be in the depreciation reserve and the sum actually accumulated. They are then in a position to know, at all times, the depreciation requirements of their company and its accomplishments in providing for deferred maintenance and depreciation reserve. In the case of many electric railroads the average costs for deferred maintenance are as large, and in some cases are larger than for current maintenance, and their importance should be fully taken into account in a system of accounting that is to show the true operating costs of any property.

To estimate the correct amount of annual depreciation that should be expected in an electric railroad, the factors of "decrepitude" and "obsolescence" must each be given due weight. The effect of "decrepitude" is likely to be physically apparent in a piece of apparatus during a larger portion of its useful life than is that of "obsolescence," but the ultimate effect of either is to terminate the useful life of the apparatus. With buildings, power-plant apparatus and electrical equipment the factors of "decrepitude" and "obsolescence" are usually both active in determining the rate of depreciation. "Obsolescence" alone determines the rate of depreciation in road bed since there is no physical deterioration that cannot be made good by current repairs, and road bed is only superseded because of abandonment of old locations, owing to requirements for better alignments, lower grades, etc. Depreciation in steel rails may usually be considered as occasioned by "decrepitude," since their replacement is generally made necessary by wear alone; unless the requirements of heavier rolling stock call for the laying of heavier steel, in which case the additional cost of heavier rails may be chargeable to capital.

There is some division of opinion as to whether railroad ties may be considered as coming within the classes of property for which deferred maintenance appropriations should be made. The propriety of making such appropriations on account of ties will be most readily appreciated if considered from the viewpoint of a new property. During the earlier years of a railroad's existence there is no expense on account of ties, further than the renewal of a defective tie from time to time, but after from five to seven years tie replacements become necessary in large quantities, and excessive expenditures for deferred maintenance occur. Thus during the earlier years a misleading cost for tie maintenance will be shown unless appropriate consideration has been given deferred maintenance in the depreciation account.

The same considerations apply to almost all parts of an electric railway property. In the case of ballast the dividing line between current maintenance and deferred maintenance is likely to be less marked than with ties, but the propriety of building up a fund to extinguish the cost of ballast on roadbed which may be abandoned owing to improved alignment and gradients following the demands of business is clearly apparent.

An intelligent estimate of depreciation in a property must

depend upon a thorough knowledge of the nature of the service demanded by the different kinds of plant, a wide acquaintance with the general experience respecting like kinds of plant, a broad survey of the probable effect of local conditions upon the useful life of the plant, and a wide knowledge of the past and present progress of the art, in order that an intelligent forecast may be made of the influences of "decrepitude" and "obsolescence" upon the rate of depreciation of the plant, and the salvage values to be expected; and the estimates should be periodically revised, as time brings forth new developments to influence past conclusions.

The difficulty of arriving at a satisfactory basis for the calculation of depreciation is unfortunately not properly appreciated by the average layman, and by many students of the street railway problem. They are inclined to believe that the depreciation charge upon a large city system is the same as that upon a suburban or interurban railroad. They even overlook the fact that the constant changes in the art of electric traction necessitate continual revisions of the tentative standards adopted for any given property.

If they keep these matters in mind, however, the true significance of the problem and its importance both to the railways and the public should be understood.<sup>1</sup>

Depreciation requires most thoughtful consideration on account of the insidious nature of its growth. When a well-designed and constructed property is new it will operate for some years without any expenditures on account of depreciation, but after a limited period apparatus becomes worn out or obsolete, and its renewal or replacement becomes necessary. Ties, which for the first few years require only the attention of the regular track gangs, become unfit for further use and must be replaced in large numbers; pole lines must be renewed in their entirety; trestles reach a condition when they must be replaced entirely, or substantially so; buildings and power plant apparatus become worn out or obsolete; cars and equipment must be replaced; old grades and alignments become inadequate, and old roadbed must be abandoned for new. In fact, depreciation must be provided against every part of the physical property except land. But the growth of depreciation or deferred maintenance expense does not necessarily become apparent in the

<sup>1</sup>For the purpose of illustrating the nature and importance of the charges which should be made to the depreciation account, the allowances made upon three

operations of the property until the necessity of relatively large expenditures for replacements is at hand, and there is the possibility of such time arriving without those in charge of the plant realizing its approach. When such replacements become necessary they necessitate expenditures in large amounts which cannot be taken care of

important systems, as reported in the Special Census Bulletin on Electric Railways for 1907, are here reproduced.

RATES OF DEPRECIATION.<sup>2</sup>

ITEM.	ESTIMATED PER CENT OF VALUE TO BE ANNUALLY PROVIDED FOR.		
	Adopted by Chicago Union Traction Co.	Adopted by Third Avenue Railroad Co., New York. <sup>3</sup>	Adopted for adjusted accounts of Milwaukee Electric Railway and Light Co.
Track and roadway:			
Track, ties, bonding, etc.....	7.75	8 to 9	7.5
Special work and installation.....	7.75		8.0
Rolling stock:			
Bodies and trucks.....	5.00	5	5.0
Electrical equipment.....	6.66 to 8.50		7.5
Fenders, registers, lights, clocks, etc.....			10.0
Overhead system:			
Poles.....	45.00		5.0
Wiring, fittings, etc.....	10.00 to 14.00		10.0
Underground system:			
Conduits.....		3	2.0
Feeders, cables, etc.....		3	4.0
Power-plant equipment:			
Engines.....	6.66	4	5.0
Boilers.....	6.66		7.5
Heaters, economizers, pumps, etc.....	6.66		7.5
Piping.....	6.66		5.0
Traveling cranes.....	6.66		5.0
Belting, shafting, ropes, etc.....	6.66		5.0
Coal and ash conveyors and hoist wagons.....	6.66		5.0
Dynamos.....	6.66		5.0
Generating apparatus.....	6.66		10.0
Storage battery.....	6.66		5.0
Switchboard and cables.....	6.66		7.5
Shop tools and machinery.....	5.00		2.0
Buildings and improvements.....	2.00	2	

With a few exceptions, each percentage in the above table refers to a group of two or more parts or kinds of plant and represents the percentage obtained from the aggregate of the depreciations for each part calculated separately. The percentages therefore may not be applicable to any other particular road without modifications. This will be appreciated by referring to the items of track, ties, bonding, etc., which are all shown in one group though they do not individually have the same rate of normal depreciation, and all engines are in one group without regard to their types or quality.

<sup>2</sup> From table submitted in the case involving the rates of fare in the city of Milwaukee, *Electric Railway Journal*, April 10, 1909.

<sup>3</sup> Rates quoted in the franchise-tax case.

<sup>4</sup> Iron poles.

by the usual appropriations for current maintenance, and their cost may not be cared for by funds on capital account, for the replacements add nothing to the capital value of the plant except in so far as the replacements may be of a more costly character than the original, in which case the difference in cost may appropriately be charged to capital account.

Where, either through want of foresight or lack of earning capacity of the property, those having in charge the well-being of an electric railroad have not seen to it that appropriate assets have been accumulated to care for the depreciation of the plant, it means that one of three conditions will arise when the time finally arrives when the replacements on account of depreciation *must* be made: Money must be borrowed, on the strength of the *future* earning capacity of the road, to cover the cost of the replacements (such borrowings being gradually liquidated from the earnings of the road), while at the same time a keen eye is kept on the care of depreciation for the future; or the property may be forced into the hands of a receiver; or it may be possible to do what is indefensible under the conditions, float additional stock or bonds to take care of expenditure for renewals of plant that is already represented in capital.

Failure to appreciate the inexorable law that apparatus must come to the end of its useful life has resulted in the financing of economically unsound electric railroad enterprises, and in the embarrassment of good enterprises through the distribution to the stockholders of funds that should have been held in reserve for deferred maintenance. Difficulties arising from lack of funds with which to provide replacements are often responsible for poor service—sometimes even for unsafe service—upon roads from which good service should be expected. On the other hand, failure to anticipate all of the expenditures that must be expected when the effects of depreciation have become apparent has, in some cases, led to the establishment of rates less than sufficient to provide for all of the expenses of the properties and give a fair return on the investment.

The importance of "The Depreciation Problem" as related to electric railway properties has not been fully recognized in the past. This is probably not surprising considering the peculiar nature of depreciation, the limited degree to which its importance has been

understood, the conditions under which many railway projects have been financed in the past, and the great magnitude of many of the railroads of the country.

In the financing of early electric railroads the depreciation expenses were frequently ignored either on account of lack of understanding of the necessity for considering such expenses or because of a desire to make a creditable paper showing of projects which, if fairly presented, would be seen to be without merit; and the policy of ignoring depreciation expenses has sometimes continued after such projects were financed, owing to deficiency in funds to care\* for such expenses. But probably the most fruitful reason for ignoring depreciation expenses in connection with electric railways has been the influence of the example of the large and well-established steam railroads. With these it has been the usual practice not to consider depreciation expenses separately from current maintenance expenses. Such procedure has been supported on the grounds that when a railroad becomes large and well established the depreciation expenses become equalized and may be distributed with much the same uniformity as those for current maintenance. The situation is different for electric railways. These are relatively new and comparatively small, and few of them have arrived at the time when the annual expenditure required for replacements has reached its maximum. In most cases, moreover, when expenditures on account of depreciation must be made they are irregularly periodic and relatively large, and cannot easily be distributed so as to be met from day to day by the current earnings. Accumulated earnings are required for their payment.

In the past it has been a not uncommon practice to finance renewals and replacements of plant by issues of stock or bonds. This procedure was frequently sanctioned without thought of impropriety. Such a procedure, however, means the ultimate destruction of any reasonable relation between the expenditures for construction charged to capital account and the actual physical property represented by plant in service. If proper attention has been given to current maintenance and deferred maintenance, an electric railroad should be capable of giving substantially as good service after years of operation as if it were a road newly constructed for the same service. The construction cost approximately chargeable to capital account should not differ materially in the two cases except



as it might be influenced by changes in costs of material and labor between earlier and later dates.

Since funds should be in hand to replace the parts of an electric railroad at the end of their useful lives, it is evident that such funds should be accumulated gradually during the lives of the parts. The ideal plan would be to make this accumulation by uniform yearly increments. Such a procedure is frequently not practicable, owing to the variations, from year to year, in the balance of gross earnings over current operating expenses, and also from the fact that for the earlier years of operation, during the upbuilding of the business, there is likely to be little or no margin of earnings which may be devoted to such purposes, although the project may have a perfectly sound basis.

Electric railroads must expect lean years when it is difficult to meet all obligations, and prosperous years when the shortcomings of the lean years should be met. The prosperous years should provide surplus for the future if a reasonable operation of the property will permit. The building up of a depreciation reserve is likely to be affected by this condition. From this fact, coupled with the fact that expenditures for renewals are irregular in their occurrence and large in amount, it is clearly seen that this important factor in the necessary expenditures of any electric railroad can only be given suitable consideration if the books of the company show how the annual appropriations made to the depreciation fund agree with the estimated amounts that should have been appropriated, and also how the fund accumulated in the depreciation reserve agrees with the surplus that should be in hand.

It should be recognized that so long as a property is in condition to give as much and as good service as when it was new, its value, as represented by the amount of legitimate earnings to which it is entitled, cannot become reduced owing to depreciation in its plant. But any depreciation that may have occurred should be offset, when practicable, by a reserve carried for that purpose, or, if the property has been unable to make full appropriations to the depreciation account, complete knowledge of the situation should be possessed by the management, and the building up of the reserve in the future should be a most important financial consideration. Since the renewals do not occur at the same time for all parts of a property, an electric railway after beginning operation is never

equipped throughout with a new plant. Therefore there is a difference between the first cost of the depreciable plant and a depreciated value estimated for the same plant on the physical condition after years of use. The depreciation reserve need not equal the full amount of this difference.

One of the simplest ways in which the books of a company may be arranged to show the facts in relation to depreciation appropriations and reserves, is to have accounts showing the amount by which the physical property of the company is depreciating month by month, as determined by estimate made in the manner heretofore explained; showing the actual appropriations made to the depreciation fund, and showing the amounts expended for replacements on account of depreciation. Any income derived from the investment of depreciation reserve may be utilized as accretions to the reserve.

An appropriate combination of such accounts will show at all times the relation between the total amount that the property has depreciated and the amount of reserve held to care for this depreciation, as well as the relation of the actual amounts appropriated to care for deferred maintenance to the amounts expended for this purpose.

Since electric railways, and other public service companies, have in many States come under the regulative control of state commissions and municipal authorities, there has been much discussion as to whether, in the case of properties which have paid generous dividends to the security holders—the depreciation account being meanwhile permitted to languish—the security holders should be expected to build up the depreciation reserve to correct proportions from earnings that might otherwise appropriately go into their own pockets. Some findings of the United States courts and rulings of state commissions indicate a tendency toward an affirmative answer, but a difficult phase of the matter is the determination of what may be considered undue dividends for an electric railway company, especially during past years, considering the newness of the art of electric railroading and the relatively unstable state of the business during the past and in the present. Such questions as these do not affect the obligation on the part of electric railroad managements to have their accounts arranged so that they will be kept informed whether they are protecting the interests of their prop-

erties in the matter of depreciation appropriations and reserves; and, if they are not, that they may have the information to enable them to intelligently handle the problem of correcting the situation.

Even if a property is not in a position to care for depreciation as outlined in the foregoing, owing to relatively small earnings, this does not justify ignoring the facts relating to depreciation since any readjustments of rates that may be found necessary should be undertaken with full knowledge of all matters affecting the real cost of service. Commissions and others, who have given attention to the question of railroad capitalization and rates, agree that deferred maintenance costs should be met as an operating cost and not as a capital charge. Under these conditions it is essential that electric railway companies should accumulate funds from earnings which will place them in position to care for the renewals required by the effects of depreciation.

It should be borne in mind that "The Depreciation Problem" does not represent the only purpose for which funds must be accumulated during the present to care for liabilities maturing in the future. Every company must expect to meet expenditures occasioned by extraordinary occurrences which cannot well be covered by ordinary insurance, such as the effects of unusual storms and conflagrations, the results of strikes, extraordinary accidents, and the like; and every company occupying public ways is confronted with the certainty that they will be compelled to make costly changes of plant owing to changes made in state or municipal regulations. It is proper that a company should make annual appropriations to provide funds to meet obligations arising from such causes.

Where franchises are limited there is the necessity for accumulating sufficient reserve funds to protect the security holders from loss of their capital under the most unfavorable conditions that are likely to arise at the termination of the franchises. Where companies abandon valuable plants, as when they give up their own power plants to buy power from outside sources, the net value of such abandoned property should be gradually extinguished from the capital account by accumulations from earnings. Again, plans for financing electric railroad properties frequently call for accumulations of earnings according to a definite contract; and other legitimate needs for reserve or surplus funds arise.

In the foregoing consideration of "The Depreciation Problem" I have followed principles having general application to all electric railways. The question of rates charged by public service companies is far from being settled. An extensive readjustment is now taking place, and it seems inevitable that rates will be periodically revised in the future. It seems manifest, therefore, that a full understanding of all the elements which make up the cost of railroad service is necessary. An important one of these elements, and one which has heretofore failed of adequate attention is that of depreciation renewals. The renewal expenses required by depreciation should be squarely faced, and not passed on in multiplied ratio to future generations.

## METHODS OF INCREASING THE EFFICIENCY OF SURFACE LINES IN LARGE CITIES

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When this comparatively new instrument of civilization, the street car, shall have reached its highest degree of efficiency it will transport passengers:

(1) With the highest degree of safety to the passengers on the car and to the public on the street.

(2) With the highest degree of speed consistent with such safety.

(3) With the highest degree of regularity and certainty as to schedule.

(4) With the highest degree of comfort to passengers.

(5) With the highest degree of economy.

Street car service in our large cities, through the labors of an army of able and zealous men, has reached a high degree of excellence, but undoubtedly in each of the points—safety, speed certainty, regularity of schedule, comfort and economy—it is capable of further and perhaps even radical improvements. The question of improvement in the service is one of wide importance. It affects the majority of the people of our large cities daily and twice a day; moreover, the question is not only of great importance now, but it is of growing importance, because the large cities are increasing rapidly in population and still more rapidly in area.

If improvements are practical they will come, and come soon, for we live in the very age of improvement. In the old times there was but a vague, dim notion of what improvements were needed, and little hope or thought that they could be brought about. If people had had horse cars in the year 1000 they would have had the same horse cars in the year 1400 and in the years 1500, 1600 and 1700. They might have made changes in the bells on the harness and in the uniforms of the postilions, and on noblemen's cars they would have had banners, armor and gonfalons, but the art of

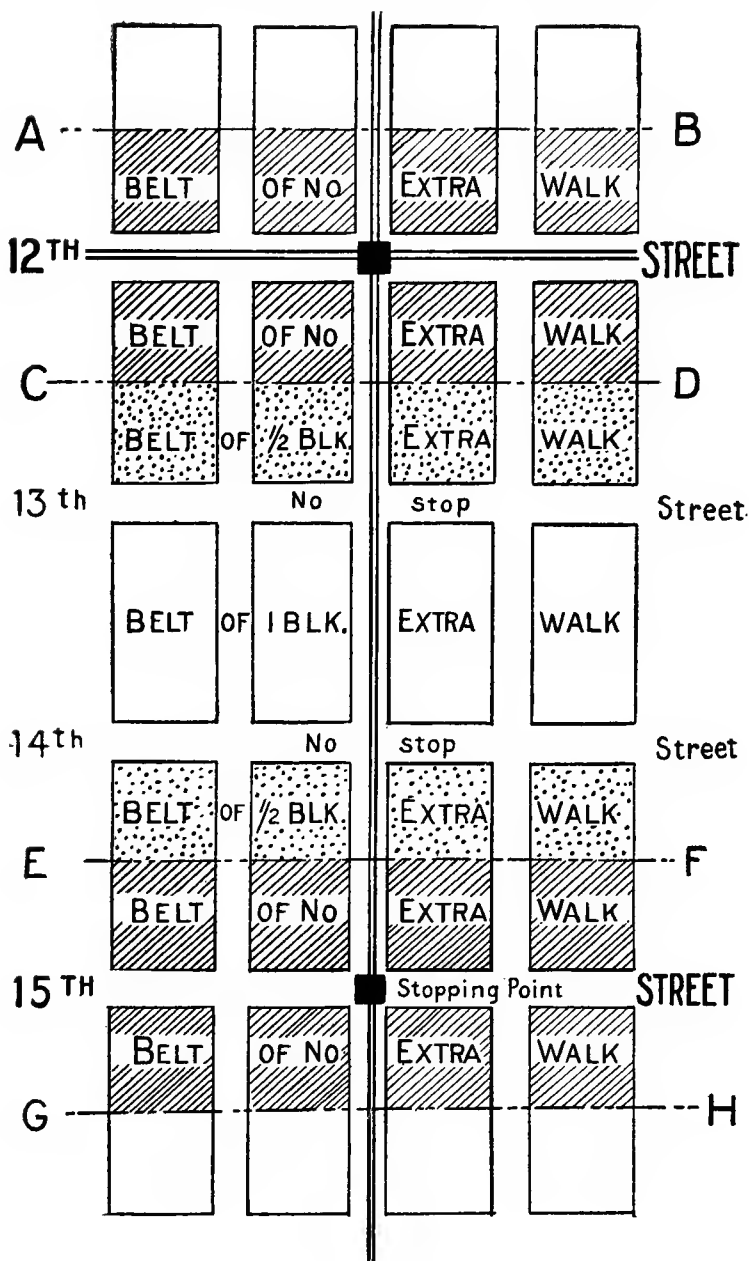
street car transportation, as far as transportation itself was concerned, would have had 700 revolving years of "lay-in'-time."

The whole life and development of the street railway is included in a period much short of a century, and we are living in the better end of the period when progress is growing more and more rapid. Years were required to show that a street car should be a street car and not an omnibus; that the pole on the car should be eliminated; that the driver need not sit on the roof; that front and rear platforms were good things, and that a car in winter should have a heater instead of dirty hay and straw. On the other hand, the last thirty years has seen the rise, development and retirement of the cable car, certainly a great improvement upon the horse car for large cities, and it has seen, also, the rise and development of the electric car to its present state of perfection.

The public now has definite notions of what it wants. It even inquires of itself if it does not want something that it has not yet thought of, and it is broadly awake to its own complete and absolute liberty to go about obtaining what it wants. The result is that specialists in all lines of public service, as well as the administrative and legislative bodies of cities, are not only encouraged, but forced to be constantly on the alert in devising and installing betterments and improvements.

I make this much of an introduction to what I have to say upon two methods of increasing the efficiency of street railways in large cities, so as to assure myself, as well as the readers of this article, that suggested improvements, if they are, in fact, improvements, are worth talking about. If the reader should consider that the changes suggested here are not, in fact, improvements, that any advantages incident to them are counterbalanced by disadvantages, or that, in the nature of things, they are impossible of accomplishment, that is the end of the matter for him. If, on the contrary, he believes that the changes would on the whole work out advantageously, but imagines that there is an inertia in the public, which makes the suggested changes visionary and impracticable, then let him be sure that he fully appreciates the wonderfully fluent and adaptable times in which we live.

*Stops.*—The first matter to be considered in this article is whether in large cities the number of stopping points of surface cars can with advantage be diminished.



Assume a section of a route as shown on the plat, and consider the stops made by a car in running from north of "12th" street to south of "15th" street. Under the present practice in our cities the car will stop for passengers to get on or off at any or all of the intersecting streets, so that on any trip the car may stop in succession at "12th" street, "13th" street, "14th" street and "15th" street.

The question arises then: Is this the system to produce the highest degree of safety, speed, certainty of schedule, and economy? The system, naturally, has a certain effect, small or great, upon each of these factors in street car effectiveness. Conspicuous in its results on important and long routes in large cities, is the intolerable multiplication of stops; but before examining the results of the system, let us first propose a different system; then, with the two systems before us the results may be studied and compared.

The proposed plan is this: That instead of stopping on signal at "12th" street, "13th" street, "14th" street and "15th" street, cars stop only at "12th" street and "15th" street, all stops at the two intermediate streets, "13th" street and "14th" street being entirely eliminated. The system, of course, would not be rigid, but the stopping places would be established so as to include transfer and other important points used by great numbers of street car patrons.

These are the two plans. What are their comparative results upon the great factors of street railway service?

Evidently a disadvantage of the proposed plan would be an increase in the walk of certain passengers. In detail this increase would be:

1. Passengers at "12th" street and "15th" street would still board or leave the cars at these points, and their walk would not be increased at all. These passengers would include all those to and from points between lines AB and CD and between the lines EF and GH.

2. Passengers to or from points between the line CD and "13th" street, and between the line EF and "14th" street would have an extra walk of from nothing up to one block. Assume the average extra walk of these passengers to be one-half block.

3. There remains to be considered the block between "13th" and "14th" streets. Passengers to or from points in this block would have one extra block to walk. They would use either the



"12th" street stopping point or the "15th" street stopping point, as might be more convenient; about half of them would also lose the time required for the car to run a block.

What does the extra walk amount to on the average? If we assume that an equal number of people under the present system use *each* of the intersections (and this, of course, is a violent assumption, as will hereinafter plainly appear), the result would be that people between the lines AB and CD, or one-third of all the people, would have no extra walk; people between the line CD and "13th" street, and between the line EF and "14th" street, or another one-third of the people, would average an extra walk of one-half a block; people in the middle block, or another one-third of the total, would have an extra walk of one block. The average extra walk for all the people, assuming all present intersections to be now equally used, would therefore be one-half of a block. Under actual conditions, as will be hereafter shown, this extra walk would be about one-quarter of a block.

It is to be particularly noted that although the proposed plan puts the stopping points three blocks apart instead of one block, it increases no passenger's walk more than one block.

As far as I can see, the small extra walk—amounting, in fact, to about one-quarter block for the average passenger, and never rising above one block—is the only disadvantage of the proposed plan. Others may see, perhaps, other disadvantages.

Now, we may consider what the advantages of the proposed plan would be. I believe that in large cities the proposed plan, if installed outside of the most congested district, would result in many advantages, some of them of great value. It is evident that the advantages will vary with the conditions on the route involved. On a route doing a small business, with passengers getting on and off infrequently, the single disadvantage of an average extra walk of one-quarter block might exceed the advantages to be derived from the plan. On the other hand, on an important route in a large city, with passengers, under the present plan, making use of a great part of all the intersections for getting on or off, the proposed plan would show its maximum of advantage. If we had a route with one hundred intersections, and there were no street or steam railway crossings, boulevards or other necessary stopping points to break up the regularity of the proposed division into three-block stops,

such a division would give thirty-four stopping points instead of one hundred; but, although cars *may* stop at every crossing, in practice they stop only at a certain number of them, and, except by actual observation of a route, it is impossible to say how many actual stops of the car would be eliminated upon that route by establishing the proposed plan. Without a knowledge of the number of stops that would be cut out, it is impossible to say how much time and expense would be saved.

To determine how many stops would be eliminated in actual service, observations have been made upon twelve main lines of street railway in Chicago. Each of the routes observed was carefully examined, and the stopping points which probably would be established, if the proposed plan were used, were determined. It is to be understood that no change was made in the actual operation of the cars, which continued under the present plan of one-block stops. In the theoretical selection of stopping points, a stopping point was included at each street intersection in the downtown district; outside of this district, a stopping point was supposed at each railway crossing, each steam road crossing, each boulevard, and each elevated station; then other stopping points were supposed intermediate between these necessary stopping points, so that in no case would more than three blocks of *ordinary length* intervene between stopping points. Good men were placed upon the cars in actual operation under the old system on a route to be observed, with blank books showing, in their order for a round trip, all the present stopping points on the route. The men indicated on the form at what points the car actually stopped, how many passengers got on at each stop and how many passengers got off at each stop. These books, when turned in, were carefully studied and the following table compiled (see page 49).

Upon a consideration of this table and the general circumstances of this problem, it appears to me, first, that a change which seems to promise to eliminate 26 per cent of all stops of street cars, except stops caused by traffic blockades, is worth examination, and worth examination now, for, to eliminate 26 per cent of such stops will save much time, increase regularity and certainty of schedules, promote comfort of passengers by reducing stops and starts, and effect important economy in operation by its saving in time, power and wear and tear.

One block	Total for all 12 routes,	Average for one route.	Per cent.
Number of stopping points for round trip....	2,079	173.25	100.00
Number of proposed stopping points for round trip .....	740	61.67	35.60
Number of present stopping points cut out..	1,339	111.58	64.40
Passengers actually counted getting on or off .....	19,492	1,624.00	100.00
Of these passengers the number getting on or off at the proposed stopping points was	13,280	1,107.00	68.13
Number of passengers getting on or off at points that would be disused under the proposed plan .....	6,212	517.00	31.87
Number of stops actually made at all points.	6,911	576.00	100.00
Number of stops made at proposed stopping points .....	3,853	321.00	55.70
Number of stops made at intermediate points .....	3,058	255.00	44.30
Number of unnecessary stops—that is, stops made to take on or let off passengers within one block of a proposed stopping point <i>on a trip when the car actually stopped at such main stopping point</i> .....	2,146	179.00	31.05
Passengers getting on or off at unneces- sary stops as defined above, being the 2,146 stops .....	4,290	357.50	22.01
Average extra walk entailed on all passengers by substitution of proposed stopping points estimated at about .....	One- quarter block.		
Estimated stops per day on routes observed.	199,238	16,603.00	100.00
Total unnecessary stops estimated.....	52,948	4,412.00	26.57
Estimated stops of surface lines in Chicago per day .....	1,200,000	.....	.....
Estimated number of stopping points on all surface lines in Chicago for one-way trip, estimated at over .....	7,000	.....	.....
Number of elevated stations in Chicago for one-way trip .....	177	.....	.....

Next, it appears to me that the value of the general principle of eliminating intermediate stops is already so amply shown by the experience of urban steam railways and elevated railways, that the public, and especially street railway men, should immediately inquire whether the same principle cannot and should not be applied at once to the street railway; for these urban steam and elevated railways not only attract great numbers of patrons to their far-separated stopping points, but, by the operation of express

trains, still further reducing the number of stopping points, they are able to draw further large numbers of passengers away from the slower service of their competitors.

That it is not the greater number of stopping points and the reduction of length of walk of patrons that make a line attractive is shown by the fact that in Chicago the elevated roads, with only about 177 stopping points, haul nearly one-third as many passengers as all the surface lines, with stopping points estimated at over 7000. The elevated roads have a single-track mileage of something over 100 miles, while the single-track mileage of the surface lines is over 850 miles; the surface lines give universal transfers; the elevated lines do not, and still, with one-eighth the mileage and one-fortieth as many stopping points, the elevated lines attract about one-third as many passengers as the surface lines. Of course, the elevated lines run through what is considered to be the best territory, but they are closely paralleled on both sides by the surface lines. Per running mile, they have about one-sixth as many stopping points as the surface lines. Evidently what the public desires is quick service and regular schedules, and to obtain these it is willing not only to take a longer walk, but even to climb stairs.

I see no particular recommendation of the present one-block stopping system in its genesis. It represents a slight evolution from the early omnibus, which stopped anywhere, but it belongs with the horse car, which moved so slowly that it lost no appreciable time by stopping, and it belongs with the beginnings of our big cities when routes were short. It does not belong in New York, Chicago, Boston, Philadelphia and the other large cities of our present day, and especially not in the larger cities of the future, which will not only contain vast numbers of people, but which also will seek to eliminate congestion in residence districts.

Consider what this one-block system means in a large city. On the Clark street line, in Chicago, in the eight miles between the center of the city and Devon avenue, there are, for a one-way trip, one hundred and thirty points used as stopping places; on the Madison street line, between the downtown district and Fortieth avenue, there are eighty-four stopping points; a three-block system would cut the one hundred and thirty stopping points to forty-seven, and the eighty-four to thirty, still allowing stops at *all* intersections downtown, and at all necessary points outside. Now, the

Clark street tracks do not end at Devon avenue, with one hundred and thirty stopping points, but continue six miles further north, making the total number of stopping points on Clark street line alone equal to the whole number of stopping points on all the elevated roads in Chicago; and the Madison street line, after reaching Fortieth avenue, with eighty-four stops, continues on six and one-half miles further west, and it, too, has as many stopping points as all the elevated railways in Chicago.

### *Specialization of the Street-car Right of Way*

If it is fine to look into the future and think of the good things that *may* happen, it is inspiring, on the rare occasions that offer, to anticipate the good things that are bound to happen.

When we plot the population curve of our own city, we may hope that, when it is projected into the future, it will pass through a given point, but we cannot be certain. When, however, we find some desirable point fixed by the equation of a known curve, of which we have already drawn a part, there is a satisfaction in knowing that, when the curve is continued, it will, in spite of the arguments of mistaken people who disagree with us, certainly pass through that point. Evolution of all roads and ways proceeds in accordance with fixed laws, and it is fine to reflect when we ride on a street car, delayed, retarded, impeded, obstructed and blockaded by all the heterogeneous surface traffic of the city, that when the curve of evolution is continued, it is bound to give us unhampered service.

Nature's long course in the establishment and development of channels of distribution and communication in living bodies; and men's establishment and development of roads move through the same stages; and if, by examining this progress, we can determine the long sweeping curve of evolution of roads and ways, we shall be able with confidence to project it into the future.

In the lowest forms of living organisms there are no channels of distribution or communication. Food and air and sensations travel by diffusion. So, in the lowest forms of society there are no roads.

In considerably higher organisms nature achieves a single definite tube, which is used for all purposes of distribution and in which the matter distributed moves indifferently in either direction.

So, in the forms of society considerably higher than the lowest, men make trails over which all kinds of traffic move together and indifferently in either direction.

In the highest forms, nature has arrived at different channels for different things; a channel for food, another for air, a set of channels to take blood of the heart and another to bring it in, a channel for the sensation of light and another for the sensation of sound, and so on. So men have produced wagon roads and steam roads and in cities traffic streets, boulevards, elevated roads and subways.

In an infinitude of time, nature has favored a movement from a low to a high efficiency. She has eliminated a great part of friction and other losses of energy. She has worked out channels of distribution and communication, each to do one thing well, instead of several things poorly. Men's progress with roads has been exactly parallel. Nature evolved these successive degrees in the perfection of the distributing system in equal steps with the evolution of the organism as a whole, and man has evolved his roads synchronously with the growth and evolution of the needs of society.

A small organism with few functions to perform has no need for a complicated system of distribution, and, in fact, until this organism is developed in powers of locomotion and means of obtaining ample food, it could not support such a system. So, a small society with few functions to perform could not maintain an elaborate system of roads. As the organism becomes larger, it is evident that distribution by diffusion becomes increasingly difficult and inadequate, and when, to increase in growth is added increase in activity, requiring the distribution of greater amounts of material for fuel and for the replacement of worn-out parts, the distributing system must be given a corresponding increase in efficiency.

Finally, nature cannot produce the maximum size, activity and efficiency in a living body without a maximum of efficiency in the distributing system in that body, and she cannot produce this maximum of efficiency in the distributing system without arriving at a minimum loss in energy and time. Men cannot produce a city of maximum size and efficiency unless they establish for it, at the same time, the best system of transportation, requiring the least loss of time and energy. We see at once that what sufficed for a small and inactive city will not suffice if we are to have a very large and very active city.

Now I wish to follow up a little more closely the past evolution of roads and ways in cities, and then suggest for consideration where the curve of this evolution will inevitably lead. -

In the earliest villages the roads were common ways, in which pedestrians, horsemen and carts, when the last came into use, moved indiscriminately and in either direction. I find that in the cities of Pompeii and Herculaneum there were narrow embankments, sometimes paved with stone, on each side of the very narrow streets, for the use of foot passengers. Here, of course, was a specialization of a part of the width of the street, but the progress in specialization was not only slow, but intermittent. I understand that in the early days in London and Paris there were no sidewalks, and as late as 1841 a traveler wrote of the streets of Berlin: "They are spacious and long, with broad margins on each side for foot passengers, and a band of plain flagstones on these margins makes them much better to walk on than the streets of most continental cities." In the course of evolution, the width of streets has been increased in correspondence with the increased activity of the people. Streets in the cities of Europe in the Middle Ages were narrow and often tortuous, as are the streets in the sluggish cities of Asia. This type of street may be quite sufficient where the people live and work in their houses, but where there must be general travel toward manufacturing and distributing centers, such streets would be entirely inadequate.

For a time, after the sides of the roadway in cities had become devoted to the use of foot-passengers, the central roadway was still left unspecialized, and the traffic remaining in it still moved as before.

By another specialization, traffic bound in opposite directions was, to some extent, confined to opposite sides of a street. In some cities, too, they have now proceeded so far that in very busy streets of sufficient width there has been a division between the roadways of rapid vehicles and slow vehicles. By further specialization in some cases there have been developed the boulevard, or pleasure drive, the elevated roadway and the subway.

The long, wide sweep of evolution of the channels of distribution and communication in all of Nature's living organisms, including cities, which are a form of Nature's living organisms, is toward the greatest efficiency, and the components of this efficiency

are economy in energy, economy in time and capacity for performance of the functions suited to the organism as a whole. In the evolution from small, inactive bodies to large, active bodies, specialization of channels has been one of the prime means of obtaining efficiency.

With the law of evolution of roads and ways in mind, and in mind far more fully and accurately than I have been able to state it, I invite the reader to consider the situation as to street car transportation, and to determine to his own satisfaction the changes that the continued operation of the laws of this evolution will surely produce in it.

When the horse car made its appearance it was simply an omnibus with a fixed track, and owing to the peculiar nature of men, which I do not excuse, the horse car was made to look as much as possible like an omnibus and to obey the rules governing omnibuses. It ran along on the common roadway with the rest of the traffic. Being a horse vehicle, like other vehicles on the street, there was only one new difficulty, and that was, running on a fixed track, it did not have so good an opportunity to proceed as the other vehicles, which could, by ingeniously moving in and out and passing around slower traffic, approximate their own normal rate of progress.

To remedy this inequality, the legislative bodies of cities provided that wagons upon street-car tracks should, on signal, quit the tracks and allow cars to pass. This legislation has been in the city codes in the larger cities of this country for, perhaps, forty years, and, to a certain extent, it has been enforced. In most cases it is our common experience that when the motorman pounds the gong the carload of passengers still look out the front windows and speculate freely as to when the driver of the vehicle ahead will, in fact, leave the track. This is about as far as the evolution of the path of the street car has progressed. Now, what about the further evolution called for by the change from small, inactive cities to large, active cities, by the change in the thing, that is the car, to be moved, and by the requirement of economy in time and energy.

When electricity took the place of animal power, the street car became widely differentiated from all other vehicles on the street. It was more rapid than the most rapid of these other vehicles; it was heavier than the heaviest of them, and, with its load of from twenty-five to seventy-five passengers, consisting in large part of



the active workers of the city, it became the most important vehicle on the street. Say that the importance of the driver of a traffic wagon, together with his load, is equal to that of two average men, which is an outside estimate, and it is evident that the business of the street car is of much greater importance than that represented by the average wagon. The electric car then is the heaviest, swiftest and most important vehicle upon the street. It has the longest distance to go, and its efficiency in transporting the public rapidly, and in allowing the large cities to expand so as to give all the people ample breathing space, depends upon its speed. When routes were short and the speed of cars was slow, delays caused by slower vehicles running on the tracks ahead of the car were of inconsiderable moment and imposed a comparatively slight tax upon the life of the city.

We have, then, in our large cities, a radically different situation in street car transportation from that in the smaller cities of former times. To show how far different the situation is, suppose that no power-driven car had yet been devised; the working limit of horse car transportation, amounting to some five or six miles, would place a wall around every city within which the city could grow only upon great and disproportionate expenditures of material and vital energy; if to-day our cities of half a million, a million, two millions and four millions were limited to horse car transportation, there would be an immense outcry for a means of faster transportation which would allow the city to grow freely, unconfined and undeformed. By great, good fortune, just as our large cities passed the endurable limits of horse car transportation, the electric car was perfected, capable of almost any degree of speed and of any extent of travel.

The same principles, which, in the past have caused nature and men to specialize channels of distribution, must necessarily now cause a specialization of the roadway of the street car. In the first place, the organism to be served, which is the city, is vastly larger than it was, and its distributing channels must be amplified in proportion. In the second place, we have different things to transmit which must go at different rates and the channels must be specialized.

The earliest steam railroad charters in New England provided that the rails must be designed so as to permit of the operation of ordinary wagons over them. This now seems ridiculous,

and yet it is ridiculous only on account of the relative speed of steam cars and wagons.

Now, in order to understand the situation, truly we must bear in mind that the present charters of steam railroads eliminate the requirements as to wagon traffic, not because the steam railroads as pieces of property belong to certain groups of individuals, but on account of the service that the public must have from these railroads, considered as channels of distribution, and as belonging to society as a whole. Nobody would want his freight between New York and Chicago to be delayed by traveling along behind a procession of wagons, and when a passenger travels by the steam roads he would be highly dissatisfied if he had to travel behind automobiles going even twenty, thirty or forty miles an hour.

The separation of the several kinds of traffic is a question of relative speed, and when there is frequent passage along a given general course by vehicles, differing greatly in speed, there must be different paths. Except in the most congested parts of our large cities, where possibly at certain times of the day, it may be impracticable, the electric car should be given a clear path. Where streets are paved, wagons should not run longitudinally upon the tracks at all, and they should cross the tracks only at street intersections. I suggest for serious consideration whether, at all street intersections, the street car should not be given the right of way. Steam cars are universally given the right of way at street crossings, and, here again, I wish to point out that this is done because it is inherently necessary in the economy of things. It is done because it would be a comparatively great tax imposed upon society if its heavy, rapid trains of steam cars were obliged to share their right of way at street intersections with other vehicles which are able to stop without much loss of time or energy. The same principle of general economy, which makes it proper that the steam-railroad trains should have the right of way over the electric car at crossings, requires that the electric car should have the right of way over wagons at crossings.

While it will be admitted by every one that a clear right of way for the electric car would be of immense advantage to the public of large cities, the question may arise whether suitable room would be left for other traffic. I think a few words will answer this question. In the first place, if we examine the evolution of roads

and ways, we will find that the specialization of parts of streets increases the capacity of the whole; even without any such increase there is room enough. For instance, there are 1486 miles of paved streets in Chicago, the average width of which is over sixty-six feet. The street car lines of Chicago are laid upon less than 450 miles of street. Sidewalks have an average width of over fourteen feet. If then, all of the 1486 miles of paved streets of Chicago were thrown into one street 1486 miles long, and the street cars were given the exclusive use of that part of the sixty-six feet of width proportionate to the total space the tracks now occupy, the entire width of the street would be divided as follows: Sidewalks, twenty-eight feet; wagon roadway between sidewalks and car tracks, thirty-three feet; car tracks, five feet.

Our streets are often called congested; in fact, there is plenty of room upon the streets, except in small territories, and the question is to use the streets so that all the people may derive the greatest advantage from them. All through the twenty-four hours of the day the greater proportion of the street area in the largest cities is practically empty—roadways, sidewalks, and all—and yet in unused streets, even when well paved, car passengers are now obliged to divide the way with wagon traffic. Moreover, it is a fact that, exclusive of the parks, more space is taken up by boulevards in Chicago, mainly devoted to pleasure riding, than is used by all of the street railways in the city.

In conclusion, I wish it understood that I put forth these suggestions for the elimination of stops and for the further specialization of the street car's roadway, for consideration by the public and street railway men. Many good reasons that I have not given for the adoption of these suggestions will occur to them, and perhaps good reasons for not adopting them may suggest themselves. I see that, at present, street-car transportation has not reached an ideal condition. It is not rapid, but slow; the schedules are not regular and certain, but irregular and uncertain; passengers are subject to continuous annoying delays, and the present system is wasteful of time and money. At the same time I see that the history of the street car is but just begun, and from considering its present importance, and the general process of evolution in the contrivances of men, as well as in nature, I am led to trust that many great and important improvements are yet to come. When I see in large cities that it is

impossible for the public to be given any but a poor, slow and irregular service; if a maximum of stops is made, and if the street-car tracks are used in common by all the street traffic, I am confident that a change will have to be made. People in the largest cities, like people in the smallest towns, have only twenty-four hours a day to live and accomplish their work. When substantial amounts of time are taken from them morning and night in waiting upon transportation, they suffer a direct loss in their efficiency, in what they are able to do, and in the sum of their enjoyments. Their city suffers with them. Restore to the multitudes of people in the large cities who travel by street cars the ten, twenty or thirty minutes twice a day that they lose on account of clogged and obstructed street-car traffic, and you have made almost another race of beings, capable of more work and more enjoyment. When expensive boulevards from 80 to 250 feet in width, surrounding and dividing cities, provided with the best pavement, ornamented with trees and flowers and cared for by gardeners, all at public cost, are considered not too much to devote to pleasure riders, certainly a strip, sixteen feet wide, on the street-car streets is not too much to devote to the daily transportation of the whole army of city workers.

The whole question of clear roadway and of stops is one of arithmetic and evolution. If the people in New York, Chicago and other large cities can give themselves a street-car service one-half more rapid and much more regular than they now enjoy, at no more expense than the discipline of their team traffic and an extra walk averaging about 150 feet, I think they will demand the better service.

## THE INVESTIGATION OF TRAFFIC POSSIBILITIES OF PROPOSED SUBWAY LINES

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The investigation of traffic possibilities of proposed subway lines is one phase of the general problem of determining the traffic possibilities of any transportation system that may be built over or under city streets, or on private right of way without grade crossing. These lines may properly be designated as Rapid Transit Systems.

If we study what has been done in large cities in the last thirty-five years, we obtain considerable data and assistance, as lines of this character have been built here and abroad in the following cities, beginning with New York City about 1878:

*Elevated Roads.*—New York City, Brooklyn, Chicago, Boston, Philadelphia, Berlin, Paris, Liverpool.

*Subways.*—Boston, New York (Manhattan), Brooklyn, Philadelphia, Berlin, Paris, London, Budapest.

Each city appears to present its own peculiar problems, due to the difference in city plan, relative location of business and residential districts, and other purely local conditions.

With the exception of the Boston and New York subways all these American rapid transit lines have been built by private capital as business ventures, and as the greater number were built with the idea of creating or building up traffic they had very little financial success for many years, several of them suffering from lack of sufficient patronage to produce net earnings sufficient to pay interest on their cost, and passing through receivers' hands.

The earlier rapid transit lines were operated by steam locomotives, but the substitution of electric motors began between 1893 and 1895, and as all are now electrically operated, reference will be made to no other method.

Compared with elevated railroads, subways have real advantages and disadvantages, as follows:

*Advantages*

No obstruction in street.  
Larger platform space.  
Less stair climbing.  
Less noise on street.

*Disadvantages*

Greater interference with business during construction.  
Much higher cost of construction.  
Artificial lighting.  
Difficulty in waterproofing and taking care of drainage; also of properly cooling or ventilating.

The reason for any study of a proposed project of this kind is, of course, primarily to determine its commercial feasibility, since if built with private capital the most important questions to be answered are:

(1) Will it pay from the start its operating expenses and a fair return on its total cost?

(2) If not from the start, how soon will it reach a satisfactory income basis, and what will the losses have been in the meantime?

(3) What will the greatest profit be when the line reaches its full carrying capacity?

While these questions involve a preliminary estimate of the cost of the proposed route, it will be readily seen that the most important factor to be correctly estimated is the amount of the income, since if this can be approximately foretold, it determines the feasibility of any project.

Under equal conditions, with the same type of equipment and the same number of stops per mile, the traffic capacity, and therefore the income of the different rapid transit systems, should be approximately the same. That is, as a transportation machine a subway has no greater efficiency than an elevated road or a road on private right of way.

As the operating expenses under equal conditions are approximately the same for each type, the net earnings should be the same, and from the above it will be clear that the type of railway having the lowest total cost of construction should be the most profitable.

Rapid transit systems are usually intended purely for passenger transportation. Hence the first data to be obtained relates to the probable number of passengers per annum that will patronize the line when opened; Second, What will be the probable increase in business or travel each year for, say, five years? Assuming the

fare will remain at the now customary amount—five cents—the income can be, of course, readily known, and this will be distributed as follows:

Operation and maintenance.

Taxes and municipal charges.

Interest on investment.

Depreciation or its equivalent should be allowed for as soon as the line reaches a paying basis.

Since these lines usually follow an earlier built surface street car line, from its earnings an estimate of the income can usually be made by assuming

(1) That it will take a certain period of time, say three years, to build the rapid transit line, and this allowance for growth should be added to the present income of the surface lines. This growth is usually stimulated by the prospect of better transit facilities and is, consequently, greater than the normal rate.

(2) That a large percentage of the surface car lines long riders and a small percentage of the short riders will be diverted to the quicker route.

(3) That cross-town lines of surface cars will furnish quite a large business, particularly if an arrangement for interchange of passengers can be made. This brings up the subject of transfers, which will not be enlarged upon here.

(4) If in competition with steam railroads some traffic will be obtained if better or more frequent service is rendered. Right here it may be said that while lines of this class do not cater to so-called "pleasure riders," the provision of comfortable cars and clean, quick and frequent service will have a marked effect in the number of riders, and consequently in the income.

No general rules for making these estimates can be given. It is a case calling for the exercise of caution and judgment by the engineer who makes the estimates and the promoter who finances the project. Herein lies the large business risk, and the writer believes that inasmuch as the growth of large cities demands the supply of some quicker form of transportation than is afforded by street cars, the city itself should construct the tunnels or elevated structures which represent a large part of the investment, leaving the same to be operated by a transportation company.

The reasons for favoring this solution are as follows:

(1) The great benefit is to those citizens who are able to patronize it.

(2) As the value of real estate for business or residential purposes is in direct proportion to the transportation facilities, the property benefited should pay directly or indirectly for part or all of these facilities. Transportation in a large city is as much one of the necessities of life as city water or sewers, and these tunnels or elevated structures are simply an extension of the street area vertically instead of horizontally, which would involve widening with its consequent property damage account.

(3) If built to take care of the "long haul" passengers the outer ends of such lines will usually be unprofitable, for these outer sections are comparatively thinly populated. It is to the interest of the operating company to make these lines as short as will develop sufficient traffic for their support, since a line five miles long will earn much more per mile per car than one ten miles long, and the total investment will only be approximately one-half as much. From the standpoint of the municipality it is desirable to reach and develop parts of the city or country beyond the field of the surface street cars.

(4) The cost of roads of this character is such that if built by private capital their construction in the future will be delayed until it is reasonably certain that they will pay interest on their cost, thereby following the population instead of leading it and developing the city's growth.

(5) In the case of subways, particularly, it is always necessary to build them so as to provide for future growth, since they can be enlarged only with great difficulty and expense. This means a much larger and more expensive structure than is needed at the start, thereby increasing the interest charges at a time when the earnings are smallest and the operating expenses are highest. Also, since these lines are usually built on main thoroughfares and will form, in the down-town district, a valuable extension of street area, it is to the city's interest when such a system is built that it shall utilize the full carrying capacity of the street. That is, a street in every way suitable for a four-track subway and in a district where four tracks will ultimately be necessary, should not be sacrificed to the present needs by allowing, say, a one- or two-track structure to be built in it.



(6) As these lines are vital to the health, wealth and general prosperity of modern large cities, there is good reason for claiming for them the same assistance and support as has frequently been extended to the undertakings of undoubted public benefit although working under private charter—as for example, the subsidizing of steamship lines, etc.

For locations where the traffic is so great as to demand more than two tracks, the subway is more suitable from the standpoint of the municipality, as a three- or four-track elevated structure is decidedly objectionable unless in a very wide street. Moreover, if the traffic is greater than two tracks can carry, the density of population is probably sufficient to warrant the more expensive subway structure.

Of course, under certain conditions, a promoter may not be free to adopt the type of transportation system which promises the greatest net profits, since in many cities there is a strong prejudice against elevated railways and equally strong sentiment favoring subways for local rapid transit systems. This dislike of elevated roads is well founded when applied to the earlier designs, such as exist in New York City. The modern designs, using heavy ballasted floors, are almost entirely free from the objections raised against the original open-deck type of construction.

As to the relative cost per mile of double-track railway or structure, it is of course difficult to make any close comparison, as local conditions affect costs, particularly of subways, to a very large extent; but the following may be assumed as a fair range of probable costs:

	Per mile of route—double track	
	Lowest cost.	Average cost.
Surface line (trolley).....	\$30,000	\$50,000
Open floor elevated .....	300,000	400,000
Solid “ “ .....	550,000	700,000
Subways .....	2,000,000	4,000,000

As lines on private right of way involve the purchase of large amounts of real estate, no general range of probable costs can be given. The figure of \$4,000,000 given above for cost of one mile of subway construction may even be exceeded in special cases, as in the Washington Street Subway in Boston, one of the most difficult and expensive pieces of work, considering its length, that has been built for a rapid transit system.

City surface street cars can not usually be classed among rapid transit systems on account of being limited to low average speed by their frequent stops.

The carrying capacity per hour in one direction of any transportation system is the product of the carrying capacity per car multiplied by the number of cars per hour passing a fixed point.

The maximum capacity for a double track line of surface cars, without overcrowding, is probably about 80 passengers per car  $\times$  150 cars per hour = 12,000 passengers in one direction. While for a modern rapid transit line running ten-car trains on one minute headway, we may take 100 passengers per car  $\times$  10 cars per train  $\times$  60 trains per hour = 60,000; or, say, five times the capacity of a surface line. This is passenger capacity. However, since the schedule speed of the rapid transit line should be about double that of surface cars, the comparative maximum work done by the railroads per hour is as one to ten, that is, five times the number of passengers carried twice the distance. Starting thus with the maximum carrying capacity, the "load factor" or ratio of average travel to maximum travel must be estimated. The daily period of maximum travel on all city transportation lines will average, say, two hours each in the morning and evening, a total of four hours, with fourteen hours of light travel and six hours with little or none.

As an example, take the Market Street Subway in Philadelphia. From the last (1910) report, we learn that this road, with a length of seven and one-half miles between terminals earned, in round numbers, \$1,500,000 and ran 4,258,000 car miles; thus earning about thirty-four cents per car mile. The maximum service at present supplied during the rush period consists of five-car trains on two and one-half minute headway, twenty-four trains per hour equals 120 cars per hour past any station.

Four million two hundred and fifty-eight thousand car miles per year on an eighteen-hour basis on this particular road is equivalent to an average of forty-three cars per hour past any station, a load factor of about thirty-six per cent or thirty-nine cars on the basis of twenty hours operation (thirty per cent).

This proportion will vary in different cities, depending on the character of the territory served, the quality of service and the amount of competition. It is interesting to note, in the case above, that while the rapid transit line earns thirty-four cents per car mile,

the surface car line which parallels it earns twenty-six cents per car mile, showing that each grade of transportation fills a need and one supplements the other.

If we assume the minimum total cost of a double track subway railroad, including equipment at the low figure of \$2,000,000 per mile, it is clear that it must earn at least about as follows to be commercially successful:

Interest 6 per cent.....	\$120,000
Operation and taxes (50 per cent of gross earnings).....	120,000
Total! .....	<hr/> \$240,000

or at five cents fare, 4,800,000 passengers per mile of route per annum.

Should local conditions make the total cost higher than \$2,000,000 per mile, or should the operating expenses and taxes exceed fifty per cent of the earnings the interest item would have to be reduced or the traffic increased.

The Market Street Elevated in Philadelphia by its last (1910) report carried about 30,000,000 passengers on seven and one-half miles of route, or 4,000,000 per mile. The elevated roads of New York city carried last year about 7,500,000 passengers per mile of route and the subways about 10,000,000, part of the latter route being four-track.

In only one of the American cities (Boston) has an entire subway been built to form a down-town terminal for surface street cars, although a part of the Philadelphia subway was so designed. It is the writer's belief that short sections of subways in the congested district, for use by surface cars, will prove a solution for the "rush hour problem" in the large eastern cities where the streets are narrow and the business section confined to a limited area. This solution has much to recommend it, the strongest argument being the comparatively low expenditure for the advantages gained, and the structure being built in the terminal district may form part of a true rapid transit line when the growth of the city outruns the carrying capacity of surface cars.

A second argument results from the fact that on few lines in the residential sections of a city is a shorter "headway" between cars than two minutes warranted even during "rush" periods; this

would permit, let us say, four to six surface car lines from different parts of one district to be brought into one subway and thereby serve a much larger population than one rapid transit line *based on equal time of trip*, and at much lower cost, owing to much of the route being served by the lower cost surface car equipment. Of course, the subway portion will not be worked so efficiently as when used for train operation, handling, say, 120 cars per hour in single units instead of, say, 500 per hour with train operation; but these facts should be taken into consideration:

(1) That a subway when built must always have a capacity largely in excess of the traffic intended for it at the time of construction, in order to allow for growth.

(2) As they are only built in congested districts, they really form city terminals and reduce delays from obstructions and interference on the street, thereby permitting higher schedule speeds for which considerable outlay is warranted.

(3) The outlay is made as the business and traffic require; that is, the addition of the subway terminals to the surface lines permits them to be operated to their full capacity, and when this is reached, the rapid transit line can be completed and train equipment added as needed.

(4) A rapid transit line operated independently of the surface lines usually serves only a comparatively narrow territory lying along each side of it—say not over 1,500 feet as an average, or it must draw the bulk of its traffic from an area of 300 to 400 acres per mile of route. If operated in connection with surface lines, this area will be much increased, but it introduces the transfer problem, which should always be avoided when possible, and involves change of cars, also objectionable and tending to reduce traffic. The proposed plan allows “through routing” and avoids the objectionable features mentioned above.

The writer believes that each type of road has its own proper field.

The subway or tunnel system is particularly well adapted for use in the down-town or business district. Here it performs the function of a terminal, and the high construction cost is partly offset by the saving in property damages which would result from any other form of construction. In a congested business district the columns of an elevated structure are decidedly objectionable,

whether they are located on the curb line or in the street pavement, and the elevated stations with the long platforms needed to accommodate the eight- or ten-car trains are not things of beauty as ordinarily designed. These platforms, to accommodate ten-car trains, should be not less than 450 feet long, and with stations one-half mile (2,640 feet) apart, seventeen per cent of the total length of line would be station platforms.

In the outer sections of cities, while the subway system may be preferable from the standpoint of appearance and freedom from noise, the less expensive elevated type of structure is the more advisable on account of the comparatively limited amount of traffic. Considered as a transportation tool, the theory of efficiency demands that for rapid transit systems the total cost for interest and operation and maintenance shall be the lowest possible. Assuming that the items for operation and maintenance would be the same for subway and elevated roads under equal conditions, it is clear that the cheapest form of construction which will do the work should be used, as this will make the total cost of carrying a passenger the minimum, and with a fixed rate of fare, should leave a maximum of profit.

The expression, "cheapest form of construction," is used in an engineering sense, and means that in making comparative estimates of the cost of these systems only the real essential features need be included. All expenses for ornamentation or decoration, where it involves extra cost, should be estimated separately. While not advocating the lavish use of ornamental features, the writer believes that elevated railways, particularly, can be made less objectionable to the public by proper and careful design.

Finally, the writer would earnestly urge the transportation committees in our large cities to have a complete unbiased engineering study made of all their local needs and conditions before deciding to recommend franchises for any particular rapid transit route, whether subway or elevated, as the transportation of our cities should be developed as a whole and along a definite and determined plan.

## POSSIBILITIES OF FREIGHT TRAFFIC ON INTER- URBAN LINES

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BY FRANK S. CUMMINS,  
Traffic Manager, The Inter-Urban Railway, Des Moines, Iowa.

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The word interurban as applied to railways to-day is descriptive of the frequent passenger and freight service between cities, towns and country districts which has come to be the distinguishing characteristics of these properties.

The first interurban railways were built for passenger traffic only, and with little or no idea of revenue from freight or other traffic. These lines were built cheaply, for operation by electricity and were, in a way, but street car lines extended out from large cities into the surrounding country and to neighboring towns. Franchises were obtained in the towns for the use of the streets. In some cases highways were used through the country; where private right of way was obtained it was devious and narrow, the alignment was crooked, the grades heavy.

Soon after the establishment of these passenger lines it became apparent that a package, or less than car-load freight service, could be established with profit and without interference to the passenger service already established. Then came the establishment, where the physical condition of the property permitted, of a car-load freight service. As new lines and extensions were projected, especially in less densely populated territories, the possible freight earnings were considered and the lines constructed and equipped for freight traffic as well as passenger traffic. And so the change has been going on until the modern interurban railway of to-day is, in many instances, a thoroughly well-built and equipped railroad operated by electricity.

The modern, well-built interurban railway, with its adequate facilities at its large terminals, consisting of a conveniently located and arranged freight house for less than car-load shipments, conveniently located team yards for car-load shipments, suitable provisions for factory and warehouse locations, transfer connections with the other railways entering the terminal, adequate facilities at

all towns (consisting of a conveniently located freight station, and yard with team track, stock yards, and land available for elevator and warehouse sites), its intermediate industrial sidings at reasonable distances from towns and its freight equipment and motive power sufficient for the business of its territory has unlimited opportunities for freight traffic.

The days of railroad cut-rates, rebates and special privileges to favored shippers are gone. Business must now be created and controlled largely through the service and facilities of the railway. The interurban railway may excel in its territory its steam competitors, by offering to its shippers more frequent and reliable service and equally good or better facilities. It is in position, because of its low operating cost per train unit, to give frequent regular service for less than car-load shipments, and for car-load shipments; and special movements for comparatively small tonnage trains of live stock and perishable freight. Again, because of the local character of its business, it can make much better provision for the volume of its business and thus give its shippers more reliable and satisfactory delivery. It does not become congested with an unusual volume of through business, as it practically has none; nor do weather conditions seriously impede its operations.

This service of the interurban railway is of great value to every resident along its lines and to every shipper in its territory. For this reason it obtains at competitive points the major portion of the business, and at non-competitive points draws from a much enlarged territory. Its tributary territory increases in population and production; new enterprises seek its towns. It creates new freight traffic through the encouragement given in town and country to the production of high class commodities.

Just as an interurban railway is limited in possible freight earnings if it can only transport less than car-load shipments, so is it handicapped if it may only transport local shipments. By local shipments is meant those originating at or destined to points on its own line. Foreign business, or that originating at or destined to points on the lines of its connections, can be handled only when proper provision is made for interchange and satisfactory arrangements made with connecting lines for the handling of this through traffic as a whole or in part under through tariffs and at a through

rate. Many steam lines have opposed this joint business with interurban railways; the opposition being much greater in some localities than in others.

In some few instances where steam lines have refused to recognize interurban lines and interchange traffic with them, they have been forced by law to do so. In other instances the arrangement is brought about as a reciprocal traffic agreement wherein the steam line hopes to profit from the tonnage which the interurban railway is in position to route via or deliver to its line. And, this tonnage may be made an item worth while, for with proper service, and equitable and competitive rates, the limit to the tonnage which the interurban railway may obtain is the entire tonnage which is shipped into or out of its entire territory, when this territory is developed to the highest possible degree of business activity and productivity.

Much of the opposition of the steam lines has been caused by the methods adopted by the interurban railway for conducting its business. Cut-rates for local business are not fair competition if the interurban railway expects its connecting lines to join it in through or foreign traffic. Local methods of accounting in particular through traffic and interchange at variance with standard practice; failure to comply with, or adopt in practice the rules of the various national railway associations pertaining to through traffic; improper facilities, or the lack of any facilities at all, and the lack of systematic operation, discourage the steam railways in this traffic arrangement. Every connection possible should be obtained, because each line reaches much local territory not reached by other lines, and has its influence on many distant connections.

The interurban railway, when in position to handle local and foreign traffic, is given the greatest opportunity to develop its territory. In farming country, grain elevators, lumber, coal and stock yards, and factories may be located on its depot grounds at all stations. In large cities, warehouses and factories may be located along its lines, and at all points sidings may be laid to factories already established, and transfer connections made with all railways for the reciprocal switching of cars between all industries in the town.

In an ordinary territory, be it farming, mining, or in fact any



sort of a district, the car-load business of a railway will far exceed the less than car-load business. It is from this car-load business that the railway will receive its greatest freight earnings. The major portion of car-load business is not so-called perishable freight; much of the less-than-car-load freight is. Car-load freight is loaded or unloaded by the shipper; less-than-car-load freight is loaded and unloaded, perhaps handled several times, by the railway employees. Both require practically an equal amount of station time and expense. The car-load business of a territory is the foundation of a freight business, and the interurban railway, equipped for less than car-load business only, is receiving but a small part of the possible freight earnings in its territory. With an established car-load business in the important commodities of its territory, the interurban railway will find a means of maintaining for all shipments a regular and reliable service, which is essential to the successful conduct of a freight business.

A prosperous appearance inspires confidence. The prosperous appearing lawyer inspires confidence in the mind of his client; the prosperous appearing bank inspires the confidence of the depositor, and so does the prosperous appearing railway inspire the confidence of the shipper. An interurban will not, or cannot, succeed in any community until it obtains the confidence of the shippers and until these shippers are satisfied that they may route their shipments via the interurban railway with every assurance of as good or better service than they may obtain otherwise.

If the weeds are growing on the right of way along the team track and around the depot, it is a sign of lack of business. These weeds must not grow; this lack of business must not continue; regular business in the necessary commodities of the community must be established which will give to the interurban property the appearance of prosperity so necessary to success. Back this up by service which can be depended upon at all times, and the interurban railway stands a fair chance of holding its own in the business of the community. Convince the shippers by proof that the grain, the hogs, and the cattle can be hauled to market, no matter where the market may be, and the merchants of the community will be satisfied that you can haul not only the merchandise shipments from the neighboring town, but can also haul from any point the car-load merchan-

dise such as flour, feed, fruits, furniture, coal, lumber, and all the necessary articles consumed by the community. The proof to be given the shipper is service—and in this as in no other thing may the interurban railway excel. As previously stated, the only limit to be placed on the freight business of the modern interurban railway is the total of every shipment originating in or destined to its territory.

Competition in freight traffic will exist in every community where there is more than one railway. The interurban railway equipped with industries, team yards and freight houses, equal to its competitors, for handling the necessary in-bound and out-bound commodities of the community with access to the factories and industries of the town through transfer connections, and enjoying reciprocal switching arrangements or through private industry tracks, can fairly compete for the business of the community.

The frequent and regular service of the interurban railway is of the utmost value, for by this means it outdistances competition in local merchandise and in local car-load shipments. This frequent service and the through traffic arrangements with several steam lines, insures to the shipper the shortest route with naturally the best time to or from any distant market, and at a rate equal to competitors. These connections with steam lines, if in a territory where many connections may be made and through rates and routes established to and from many markets, give the buyer and the shipper located on the interurban lines many advantages. The south, east, west or north may be the best market at any given time for the grain, live stock or other commodities originating in the territory. These connections put these markets within easy reach and afford the service so essential to the largest profit of the shipper. Many markets offer quicker sales and bigger profits with less hazard and less capital invested for the produce shipper.

The manufacturer, the merchant and the dealer in lumber, coal and similar articles, appreciates a large territory for selling or buying. The direct route is added assurance of the receipt of shipments in salable and undamaged condition, and in the shortest time possible. This reduces the hazard in his business by permitting the carrying of a smaller stock, yet with every assurance of taking care of all trade with seasonable and salable goods.

To hold the respect of the community and of the connections upon whom it depends for much service and many favors, the interurban railway must compete fairly ; it must be a railway among railways. It must not undermine the business of its competitor by unfair or unbusiness-like methods. It does not need to do this to obtain business, for as soon as its worth in the community becomes apparent it can obtain an always increasing business through the accommodations it has to offer.

The interurban railway must always bear in mind that it is a local proposition, that for this reason its territory will show its appreciation of the attention given to its business, and that, regardless of the length of the line or the size of the trade center, every mile of the track is a main line and every town or industrial siding on the main line is entitled to only the best in service. No business is too small or none too large for the interurban railway. It has no through business not originating in its territory to congest its rails ; it is in position to give to its territory service and attention as no competitor, with its larger and more complicated organization may give. This is intensified railroading which makes the possibility of developing local freight traffic practically unlimited.

The interurban railway is to-day local in character. If in the future these lines are extended or consolidated until great systems of many miles in length are built up, added traffic of a through nature will be given to these present local lines. But if, in any way, this through traffic be permitted to interfere with the local service, and the attention it is now possible to give the local territory, the interurban railway will lose its greatest opportunity. As long as the interurban railway will keep its organization and its service local in character, it will only gain by this consolidation. The opportunities of the consolidated railway will be greater than the opportunities of any form of railway now in existence.

Perhaps no phase of the interurban railway question offers more serious problems and yet greater opportunities than the industrial development of the territory. The interurban railway may profitably center its energy upon the development of a comparatively small territory, and need not rest content until every foot of territory is producing every ton of freight possible.

How can this territory be made to produce the greatest tonnage

for the railway? The character of the country must be very carefully studied and all natural resources taken into account. Grain elevators must be established, with grain buyers, at all points in grain-producing territory; retail coal dealers must be found and located on the railway grounds. Lumber yards, farm machinery warehouses, merchandise warehouses, must be brought into the community, either from old locations or as new companies. All classes of business dependent upon railway transportation must be encouraged.

The co-operation of the commercial organizations must be obtained in towns where these exist, or if they do not exist, organizations must be perfected in an effort to locate new factories and enterprises in the town. Every effort must be made to keep in touch with prospective moves of factories or of branches or new enterprises contemplated, and when this has been done no opportunity should be lost for demonstrating the desirability of locating in this interurban territory. Here again the local character of the interurban railway is immensely valuable, as the personal interest given to the affairs of these local commercial clubs, and in the development of these towns, is appreciated for its value by all the community.

The development of a vast factory district in or near large cities and industrial centers is very possible for the interurban railway. The assurances which it may give of adequate service for switching revenue, the liberal contracts which it can offer for trackage, and the close personal attention which may be given to the development of projects, will attract industries and make the venture successful.

The interurban railway should not rest content until every piece of land in its territory, with natural resources of commercial value, is being developed. If there be material for manufacturing, a company must be found or organized for utilizing and marketing the product; and likewise if there be mineral, timber or similar material, a way must be found for developing the property and marketing the commodity.

The farming country may even come in for its share of attention. Better farming means bigger crops and greater tonnage. New markets created by the interurban railway demand certain farm products, and the growing of such products is to be encour-

aged. The land close to large cities may be developed into small truck, poultry and fruit farms, creating a local tonnage of high-class freight into the cities and a tonnage out-bound for the subsistence of the community. Dairy farms for supplying the trade of the large centers may be encouraged for the traffic in milk. The establishment of canning factories in the small towns, taking from the surrounding country vegetables and fruits, will create a tonnage in-bound and out-bound.

The encouragement of locations of state institutions, sanitariums, resort hotels, and of real estate ventures in suburban towns near large cities, will add to the freight traffic through the tonnage of building materials and subsistence merchandise.

These are a few of the opportunities given to an interurban line for creating freight traffic in its territory.

Solicitation of freight is of the utmost importance to the interurban railway. The shippers must be given knowledge of the service which the railway has to offer; of the territory from or to which it can handle shipments to the best advantage, and the assurance that the rate is competitive. When contracts are to be let for supplies, such as coal for industries, etc., the buyer must be brought in touch with dealers on the railways' lines or with those who will ship via the railways' lines. Frequently contracts are let for new construction, such as public buildings, to contractors not located in the territory and not acquainted with the service of the interurban railway. The advantages of the line must be brought to the attention of such parties, while at the same time local supply men should be requested to ask for opportunities to bid on the materials.

If a farmer, merchant, dealer or plain ordinary man has anything to sell, or wants to buy anything produced on the interurban lines, a buyer or seller must be found and the movement be thus secured for the railways' lines. Consistent solicitation and friendly calls upon the shippers of the territory will bring results. It advertises and keeps the line before the people, it pleases the shipper to think that his business is appreciated and worth asking for, it affords the solicitor the opportunity to straighten out many little misunderstandings which might result in withdrawal of business from the line, and it informs him of many large shipments moving in or out of the territory which might otherwise be overlooked. Regardless of the excellence of the service which you may have to offer, the

average shipper wants the railway to come after the business and ask for it.

Opportunity is given the interurban to advertise its freight service, through its passenger service. This keeps the line before the people, which is the essential thing in railway advertising.

Steam railways make the claim that in some instances passenger trains are operated at a loss, as an incentive to freight traffic. This may never be necessary on interurban lines, but efficient, frequent and convenient passenger train service is a great help to the interurban railway in obtaining freight traffic. Likewise good freight service for merchandise shipments is a big help in obtaining general freight traffic. "On Time" service is the best advertisement a railway can have, for a satisfied traveler or shipper praises it; a dissatisfied one "knocks," and the "knocker" makes the most noise.

Keep the freight service before the people, through the columns of the local papers, special advertising time-cards and bulletins to agents and representatives. This is not costly. A few dollars each year will keep the shippers supplied with all necessary information, and they will repay many times over in traffic the thoughtfulness of the railway company.

The organization of the freight department for an interurban railway must not contain red tape; but, to give results, must be made up of good men, doing their work intelligently and carefully. Every man from the traffic manager to the station agent is an important factor in the freight business of the interurban railway. Careful and conscientious attention to details and prompt and courteous attention to inquiries and complaints will greatly assist in obtaining the confidence of the shipper and thereby his shipments.

All work of the office must be thoroughly done, standard practice being the best method to pursue. No better blanks and forms can be used than those ordinarily used by railways and adopted by them after years of experimentation.

In the matter of freight claims, too much emphasis cannot be laid upon the value of prompt investigation and settlement, where the railway is responsible for loss, damage or overcharge. Business is often routed against a line with which just claims are pending, where the claims are long delayed in settlement through inefficient investigation.

The interurban railway must keep a record of its freight traffic even down to the smallest shipment of the smallest shipper. Records of shipments received and forwarded by individual shippers, as well as stations, will be of the utmost value in obtaining business. These records will show the amount of business obtained, and having approximate knowledge of the total tonnage of shippers or stations is an incentive to greater efforts in obtaining all the business. As an example, from the records of shipments forwarded or received in certain seasons of the year, the traffic movement may be anticipated, solicited and obtained by the interurban railway.

Possibilities of freight traffic on modern interurban railways might better be the subject of this article; but what is true of the modern interurban railway, with its facilities and traffic agreements wherein it may handle a general freight business, is also true, in part, of all interurban railways.

Those handicapped because of the physical conditions of the property must necessarily conduct a restricted freight business; but those handicapped only by lack of station facilities and traffic arrangements have prospects for the future.

The possibilities of freight traffic are great on any interurban property; the earnings most gratifying. To the modern interurban railway the possibilities and earnings are the greatest both now and in the future.

## EXPRESS BUSINESS ON INTERURBAN LINES

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BY A. EASTMAN,

General Manager, The Windsor, Essex and Lake Shore Rapid Railway  
Company, Kingsville, Ont.

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There still exists a great diversity of opinion among electric railway operators regarding the correct method of handling express and freight by electric power.

Ten years ago, very few electric railways were engaged in freight and express traffic and the question then was: Shall we engage in the freight and express traffic? The field was entered into with considerable indifference on the part of some managers. The situation, however, has undergone a rapid change and nearly all interurban railways now count on the revenue from freight and express traffic as a substantial part of their gross earnings. A statement recently prepared, shows that of thirty-nine electric railways reporting concerning the matter, the percentage of gross earnings derived from freight and express traffic amounted to from 1.5 per cent to 48.5 per cent, aggregating each company from \$1,489 to \$162,904 per year.

So far as my personal knowledge is concerned, I know of few, if any, interurban railways that are not at the present time engaged in freight and express traffic. While it has apparently been decided that the handling of freight and express is remunerative, the question as to what is the proper method still remains a point on which a great difference of opinion exists. There are many strong arguments in favor of all methods advocated.

I do not believe a general rule can be recommended or adopted as to whether interurban electric railways can handle freight or express. It appears to be a matter which is controlled entirely by local conditions; especially as regards competition, traffic to be handled, etc.

Since the topic of this paper is "Express on Interurban Lines," it would be out of place to go into a lengthy discussion as to whether



it is more desirable and remunerative to handle freight. Experience has proven beyond a doubt that there are conditions and circumstances favorable for the development of freight traffic.

It might be well at this point to distinguish clearly between freight and express traffic. Freight traffic in this particular connection includes all commodities moved or transported by electric railways, from place to place; such traffic can be handled in car load lots, or less than car load lots. The rates charged for such transportation are known as freight rates and are usually governed by an official classification; such rates cover only the transportation charge and possibly a terminal charge, but do not provide for a wagon pick-up at point of shipment or delivery at destination.

Express traffic may consist of shipments of any commodity or of merchandise, but it is usually composed of a higher class of shipments, or merchandise, than are handled by freight, and for which faster time is desired, or absolutely required. Express rates not only cover the transportation charge but provide for a pick-up and delivery at point of shipment and destination. While a number of electric railways advertise "Express service at freight rates," a real express service is not usually given, with the exception that the running time from point of shipment to destination, is as fast as in the express service. No provision is made for a wagon service. Express rates usually consist of a standard merchandise rate per hundred pounds, covering all commodities, with certain exceptions which are provided for in the express classification. A general comparison of freight and express rates cannot well be made, as express rates will usually exceed ordinary freight rates from 15 to 200 per cent, according to distance; so it can be seen that a clear distinction is made between freight and express, when the rate is taken into consideration.

Coming down to the methods employed in handling the express traffic we find that several general classes of arrangements are in force. The three most common arrangements are: First, the lease of the express privilege to a good old-line express company on a percentage of income, or a stated amount per ton basis; second, an independent express service handled and conducted entirely by the electric railway; third, a mixed service usually conducted by the railway and operated in conjunction with the freight business. A

great majority of electric railways conduct their freight business themselves as part of their regular business.

Of thirty-nine electric railways recently reporting upon the matter of express traffic it was found that twelve had arrangements with old-line express companies to handle the express traffic over their lines on a percentage or tonnage basis, and eight companies maintained an express department, with wagon service run as a local proposition. The twelve companies having arrangements with old-line express companies also handled freight traffic.

There are a number of arguments in favor of an arrangement with an old-line express company, to handle the express traffic. In the first place it opens up a wide field to an electric railway by making it possible to participate in handling through traffic, that would not or could not be handled on two local rates. Under an arrangement of this kind the old-line express company provides agents, wagons and horses at its own expense, leaving nothing for the railway to do except to transport the express matter. This can usually be accomplished with small cost unless special cars are required, which is seldom the case. This arrangement, moreover, does not hinder or complicate the development or handling of freight traffic.

There are conditions, however, that make it desirable for an electric railway to conduct, maintain and operate its own express department. It is absolutely necessary in order to make an independent service a commercial success, that the company serve a thickly populated territory and have one terminal located in a large city. Without these the amount of strictly express traffic moving would not be sufficient to warrant the expense of such a service. The maintenance of horses and wagons in connection with this service is, of necessity, a serious consideration, and such a service can only be successfully operated when local conditions are favorable.

Another method which has proven successful consists of a compromise service, with rates so arranged that three grades of service are optional with shippers and consignees: (1) whether goods are to be forwarded subject to rates providing for pick-up service at point of shipment and delivery at destination, (2) or wagon service at point of shipment or destination, (3) or simply transportation without wagon service.

Other companies have adopted the plan of handling freight traffic, but at a higher rate than charged by competing steam roads and eliminating the heavier and lower class commodities.

In conclusion it can be stated that practically all interurban railways handling freight and express, under whatever system they have adopted, find it remunerative. Any company which is considering the inauguration of an express service should first make a careful study of the local situation and secure the opinion of an experienced yet unbiased person as to whether it is advisable to enter the field, and whether to handle freight traffic only and lease the express privilege to an old-line express company, or to organize an express department and handle such traffic as a part of the organization.

## ECONOMIC FACTORS IN THE SELECTION OF CARS FOR URBAN SERVICE

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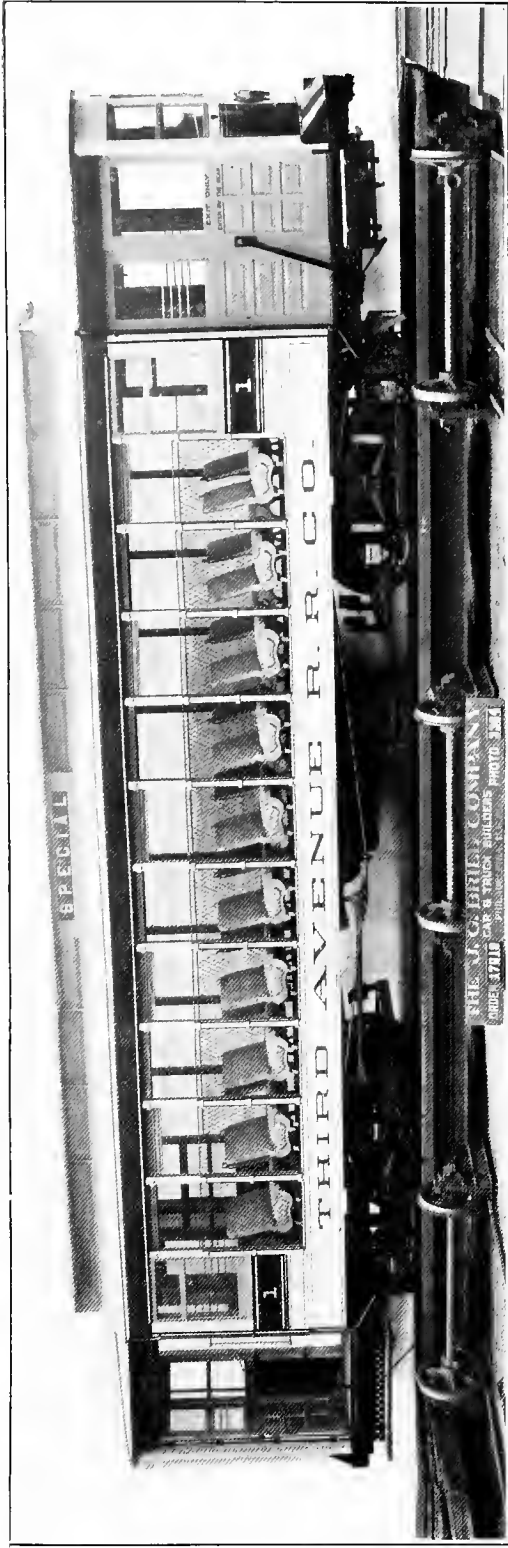
BY SAMUEL M. CURWEN,

Vice-President and General Manager of The J. G. Brill Company,  
Philadelphia.

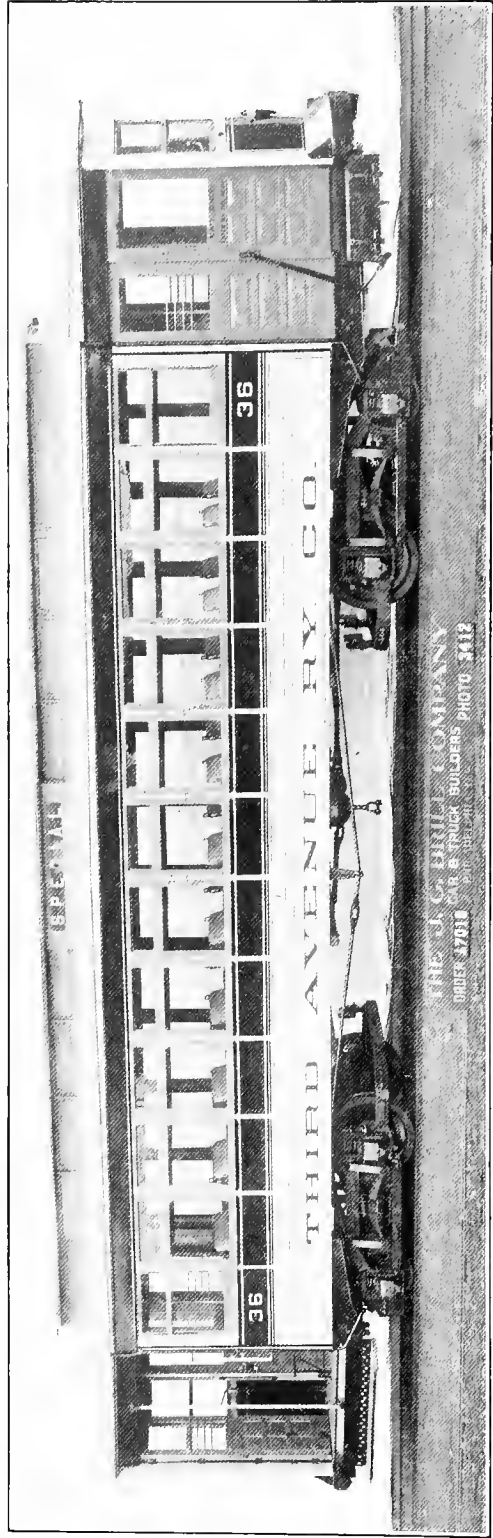
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In a series of articles under the caption, "Conditions Which Govern the Type of Car for City Service," which have been recently published in "Brill Magazine," fifteen of the principal cities of the United States are shown to have a wide variation in types of cars, no two being alike. The lengths of the bodies run from twenty-eight feet to thirty-six feet; the platforms differ all the way from five to eight feet in length, while the centers of the side posts vary from twenty-nine to thirty-four inches. In some types the seats are the longitudinal form of the old days; in others transverse seats are in vogue, and there are a number of mixed transverse and longitudinal seating plans. Weights differ widely in car bodies, trucks and motors, the car bodies differing in some cases several thousand pounds for the same length. Some of these differences, and others not mentioned, are demanded by local conditions; some are the result of local practice, methods and opinions, while some are due to the diversity of principles of design among car builders.

There is, however, a strong trend in the direction of standardization which is being very materially assisted by the consolidation of groups of railroad properties and the rehabilitation of many properties by competent engineers connected with the railways, working with a view to ultimate standardization of all equipment. The American Street and Interurban Railway Association has adopted standards and recommended practices in regard to step heights, wheel measurements, axles, journal boxes, brake shoes, etc., and is extending its good work in other directions through its committees, composed of practical men connected with the railway industries. It is hoped, therefore, that before long, instead of few orders being alike, as at present, there will be a conformity of types and a standardization of principles of design and construction, in whole or in part, reducing the cost of production, operation and maintenance.

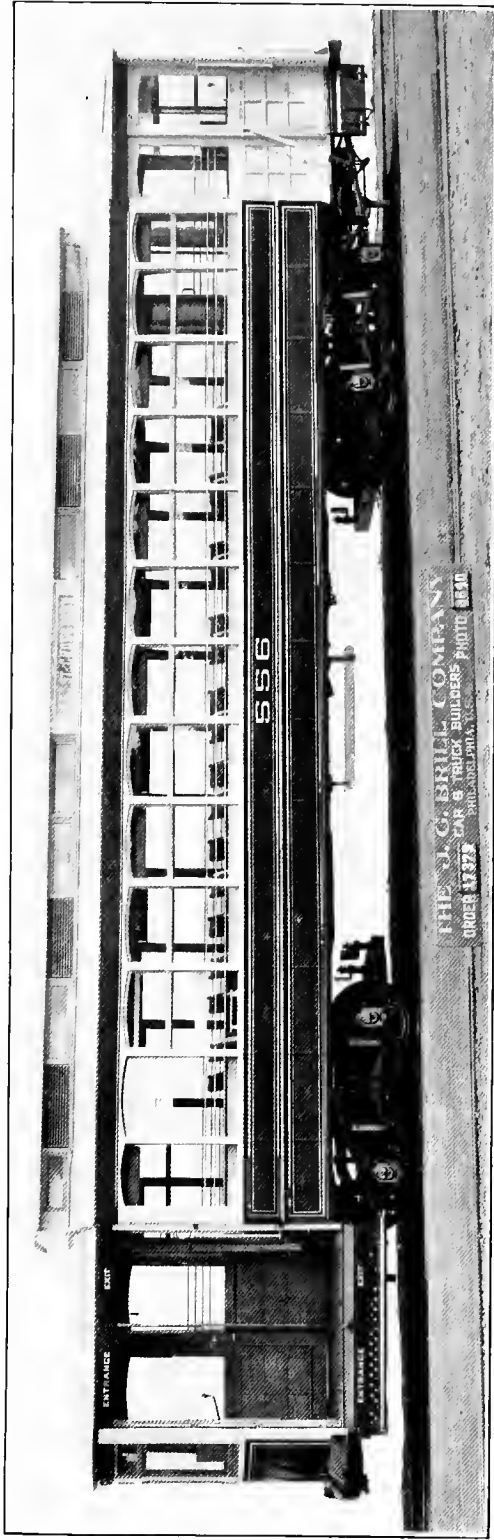


CONVERTIBLE CAR WITH PANELS AND SASHES REMOVED AND METAL SCREENS SUBSTITUTED, MOUNTED ON SINGLE-MOTOR TRUCKS.

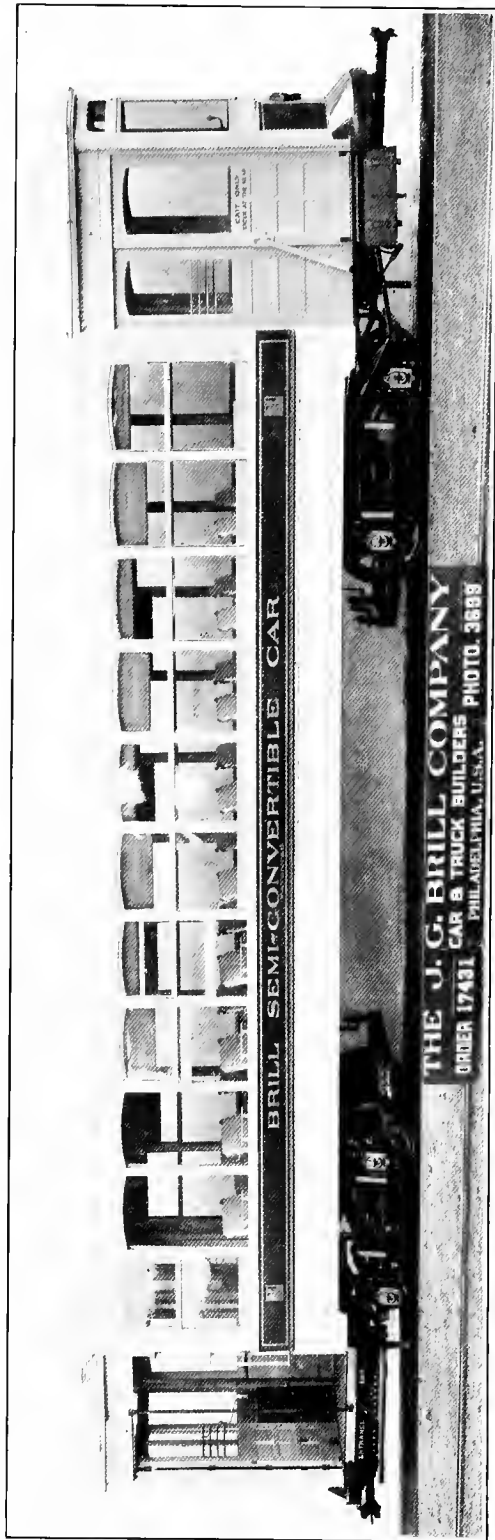


CONVERTIBLE CAR WITH REMOVABLE PANELS AND SASHES. FOR WINTER SERVICE THE MOVABLE PARTS ARE LOCKED SECURELY IN PLACE. THE UPPER SASHES ARE ARRANGED TO BE LOWERED.





SEMI-CONVERTIBLE CAR WITH PAY-AS-YOU-ENTER PLATFORMS. STEEL UNDERFRAME. MOUNTED ON SINGLE-MOTOR TRUCKS.



SEMI-CONVERTIBLE CAR WITH PLAIN ARCH ROOF AND PAY-AS-YOU-ENTER PLATFORMS. STEEL UNDERFRAME. MOUNTED ON SINGLE-MOTOR TRUCKS.





The recent progress in the art of building car bodies, trucks, motors and other equipment is creating large advances in efficiency and economy and eliminating the non-essential and freakish features and wasteful practices and principles which have, in one way or another, gained acceptance. There are still too many changes being made to enable one to predict what types will finally be established, but there are evidences in many quarters of a focusing on certain principal dimensions, seating and platform arrangements and on structural designs which will soon obliterate much of the rampant individualism of the last few years.

The greatest differences heretofore have been chiefly in the design of the bottom framing, the arrangement of windows, the seating plan and platform plan, and, above all, in the weight—differences which, generally speaking, do not appear to be necessary. The bottom framing, for a given length of body and for a certain type of trucks and motors, should be of a specific design, determined theoretically and tested practically, to insure the required support and rigidity, with a sufficient margin to resist the maximum stresses of uneven tracks, excessive speeds and extra heavy loads. Trucks and motors have been developed to a stage where there will be little change in dimensions, capacity and general features in the future. Therefore, in these particulars, there is no obstacle which materially bars the way to standardization. The transition from the wood to the steel frame has progressed gradually, and it is probable that the all-steel frame will eventually be used, but this need not prevent certain standard designs of composite frames being adopted for the present.

Out of a great variety of window arrangements two only have continued in general use—the semi-convertible system and the one in which the upper sash is stationary and the lower sash raises. The double-sash window has come into general use on account of its light weight and the desire to reduce the expense of replacement of glass. The semi-convertible window system is considered to be one of the greatest advances made in car design during the past decade, as it provides a large window opening which can be made entirely clear of the sashes at will. The manufacture of open cars has been discontinued for a number of cogent reasons, and the necessity of designing cars for all-year-around service, with ample interior width for comfortable seats and sufficient circulation of air

in summer, has greatly stimulated the introduction of the semi-convertible type. Several arrangements of this kind have been tried, but the one patented by the Brill Company is the only one that has continued to give satisfaction, as it obviates certain distinct disadvantages which handicap the others. The superiority of the Brill device can be best understood by a brief survey of the other methods in use. One method consists of removing the sashes from the car during the summer season, leaving only the curtains for protection against rain and wind. In another, both the sashes are dropped into pockets in the side walls. These pockets reduce the interior width of the car, provide a too-convenient receptacle for rubbish, rendering them extremely unsanitary, allow moisture to penetrate to the framing, and do not afford sufficient protection to the glass. Another arrangement consists of raising the upper sash into a shallow recess and dropping the lower sash into a wall pocket.

In the Brill arrangement both sashes are raised by one operation into a pocket in the side roof. The operation is simple, and the windows can be held at any desired height by a series of stops in the post grooves. By doing away with the wall pockets, the objectionable features just mentioned, especially the reduction of the interior width, are avoided. Moreover, the window sills may be brought low, the standard height being twenty-four and one-half inches above the floor. It is necessary to describe this patented feature belonging to the company which the writer represents, because of the important place which this window system has assumed in car building, a majority of the city cars now in use having this feature.

The transverse seating arrangement is now, and has been for a number of years, used in a majority of city cars, and, as each seat is placed between a pair of side posts, it depends upon the spacing of the posts whether or not the maximum seating capacity is secured. Experience has proved that two-feet-six-inch centers of posts afford sufficient room for a comfortable seating arrangement. This allows the seat to be seventeen and one-half inches wide, and the distance between the seats twelve and one-half inches. In a large number of cases, probably a majority, the seats are fourteen and one-half inches apart, which reduces the seating capacity of a car, with ten or eleven windows on a side, by four passengers. On railways where the narrower and wider spaces between the seats have both been used, there has been found no objection by the riding

public to the narrower spacing, and it would appear that this spacing of two feet six inches between centers of posts could be satisfactorily adopted as standard. On a car with eleven windows on each side, and measuring twenty-eight feet ten inches over the body, the seating arrangement which has given the best results generally consists of seven transverse seats on each side at the center of the car, and longitudinal seats occupying the space of two windows each at the corners. The longitudinal seats provide ample aisle space near the doors to prevent crowding.

The introduction of the pay-as-you-enter type of platform about five years ago in Montreal, and its subsequent adoption in the principal cities of the United States, has proved to be the most radical and beneficial improvement in car construction in the history of city railroading. By placing the motorman in control of the exit of passengers at the front end, and the conductor in control of the exit and entrance of passengers at the rear end, a large percentage of accidents is prevented. The time consumed in stops is cut down to about one-half; there is no missing of fares; speculation on the part of conductors—especially where fare boxes are a part of the equipment—is greatly reduced, and, finally, the comfort of the passengers is increased by eliminating the necessity of having the conductor pass to and fro in the car. The length of the platform enables the average group of people waiting for the car at street corners to be taken aboard before the fares are collected, thus allowing the conductor to watch all of the passengers boarding, and alighting, and enabling him to close entrance doors or gates, if such are used, and ring his signal bell, before commencing the collection of fares. The largest groups are usually taken aboard at transfer points. As a rule, cars are not delayed, however, as the transfer slips are quickly collected.

Naturally, there have been a number of variations in the prepayment-platform scheme, but these variations are in matters of detail and have to do with differences in width of car body, length of platform, and whether the platforms are inclosed with doors or are open.

Platforms of the non-prepayment type are classified as open, half-vestibuled, and vestibuled, the selection usually depending upon the climate. The lengths are from four to five feet, except in the case of cars which are operated at only one end, where it is common to use a

long platform at the rear, usually about six feet in length. The American Street and Interurban Railway Association has recommended uniformity in regard to the step heights.

Until recently car roofs have been of the monitor, or clear-story, type, fitted with ventilator sashes, and in some cases extended over the platform hoods in a manner similar to the well-known steam-car roof construction. The plain arch roof is now making its appearance in this country, after about twenty years of the monitor type, and bids fair to come into general use. The monitor roof is a broken arch, composed of four joints and inherently weak, necessitating a heavier construction than the plain arch form, and in these days, when all parts of the car are being investigated with a view to reducing weight, it is only logical that the roof should come in for a change from an inevitably heavy construction. The plain arch roof, moreover, permits of higher windows, increases the head room very considerably, and, being constructed with what is practically a double roof, has a distinct advantage if used in conjunction with several types of ventilating apparatus. An important consideration, also, which should be kept in mind in comparing the two types of roofs is in the fact that there are no joints in the plain arch roof to furnish access for moisture, the entire roof of the body being covered with canvas, made in a single piece. The plain arch roof costs less to build and, apparently, has every advantage in its favor. It is reasonable to suppose, therefore, that it will be very generally adopted in the future.

The question of cost of electrical operation, which increases very materially with the increased weight of cars, has not until recently been given sufficient attention. Great economies in operation can be gained by proper construction standards, enabling the car builder to build the very lightest car to meet satisfactorily the requirements of the service.

To manufacturers, standardization will reduce the cost of production by eliminating much of the special designing, special patterns, castings, etc. More definite knowledge of the sizes required will permit the laying-in of larger stocks of lumber and steel, with a consequent reduction in cost. It follows, also, that a large percentage of waste will be avoided. It will greatly simplify the drawing of specifications and the facility with which they can be complied with. The buying and selling of cars will be placed on a basis



INTERIOR OF CONVERTIBLE CAR ARRANGED FOR SUMMER SERVICE. SEATING CAPACITY, 45.



INTERIOR OF SEMI-CONVERTIBLE CAR. BOTH UPPER AND LOWER SASHES RAISE INTO ROOF POCKETS.





INTERIOR OF PLAIN ARCH ROOF CAR. SPACE BETWEEN CEILING AND ROOF UTILIZED FOR VACUUM VENTILATING SYSTEM. THIS TYPE OF ROOF PERMITS THE WINDOW OPENINGS TO BE  $4\frac{1}{2}$  INCHES HIGHER THAN STANDARD.





of mutual understanding, deliveries will be made earlier, and the furnishing of repair parts will be facilitated and the cost, at the same time, reduced. All this will benefit the railway company, for, besides reducing the initial cost of equipment and the cost of replacements, it will be productive of economy in the maintenance and engineering departments, and will furnish a lighter and better design of car in most cases. Standardization will also result in the wide recognition and the more speedy adoption of advances made in construction, thereby greatly accelerating the progress of the art of car building.

## THE RELATIONS OF THE ELECTRIC RAILWAY COMPANY WITH ITS EMPLOYEES

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By C. D. EMMONS,

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With the evolution of methods of transportation from the horse car creeping along the streets at the rate of four to eight miles per hour, to the heavy, high-speed interurban cars rushing through the country at the rate of forty to sixty miles per hour, there has been a corresponding change in the relations of transportation companies with their employees.

The horse car, with its open vestibules, required men of great physical endurance, but possessing relatively low standards of skill, judgment or education. The superior officers of these men were generally known as drivers, and were very often of the character that would drink to excess and would lead the host in demonstrative cursing. The hours of the employes were long, and but little thought was given to their creature comforts or to the treatment accorded them. The change from the horse car to the high-speed city and interurban car required a higher grade employe, and to their credit be it recorded that many of the horse-car drivers proved themselves capable of the necessary evolution and made first-class motormen and conductors.

With the higher character of intelligence required the former robust physique and endurance began to disappear to some extent, and it was soon evident that the man himself must need some attention.

This has resulted in the establishment of many regulations and mutual relationships, among which are the following:

*Reduction of Hours of Work and Increase in Scale of Wages.*—With the increased nervous strain which was thrown upon the driver of a transportation vehicle in changing from a six-miles-per-hour horse car to the higher speed city and interurban car, it became apparent early that the employe could not work the long hours which were endured during the horse-car period. In consequence the number of hours which the employe works has been very greatly

reduced, while at the same time the higher grade of skill required has caused a corresponding increase in the scale of wages, so that to-day the transportation employe, by working from one-half to two-thirds of the number of hours which were required of the driver of the horse car, is drawing from two to three times the wages formerly paid. This has been a natural process, and we can but anticipate that as traffic becomes heavier and the streets more congested there will be, of necessity, still further adjustments of this character.

*Apprenticeship Courses.*—In order to satisfy the demand for a higher grade of employe many roads have established apprenticeship courses, designed to train young men who have had a higher education; preferably a college education. These men will start to work for the companies in the ranks, sometimes beginning as a motor-man or a conductor, or as a power house or car shop employe. After being given a certain amount of training in each department they are from time to time transferred to other departments, with the result that after several years of training they are well equipped for almost any position in the organization.

The education of future employes is a matter of great moment to transportation companies. If care is exercised in the selection and instruction of apprentices, especially as regards the necessity for close relationship between the company and its employes, the tendency will be to bring about greater harmony between the management and all of the employes.

At the same time employes who have been in the service for years, and who show a capability for higher positions, must not be neglected. Most companies have therefore established a system governing the advancement of valuable men.

*Promotion from Ranks.*—When a vacancy occurs in a higher position, it is important that the management should first give the greatest consideration to its own men, in order to discover whether there is among its employes a man who has shown sufficient capacity, ability, steadiness of purpose and loyalty to the company to warrant his promotion to the vacant position. No more effective step can be taken by a company than to have its men feel that if they show ability and capacity, they are all in line for any opportunity which may arise. Among the larger companies this relationship is being very gradually and firmly established.

*Establishment of Rest and Recreation Rooms.*—With the increased nervous strain upon the employe the necessity of conveniences for relaxation has become apparent. Many companies have established quarters at car barns and terminals which are conveniently fitted up with toilets, wash basins and individual lockers, and contain reading rooms with comfortable chairs, and files of the popular periodicals and transportation journals. Amusement rooms, containing card tables, checkers, and pool tables, have been frequently included. These provisions give the employe an opportunity to relax during his spare or waiting moments without visiting adjacent saloon or pool rooms and getting into company which is more or less demoralizing. It also enables the company more easily to find its men if needed unexpectedly. Large expenditures are constantly being made along this line, with great benefit to both the company and the men.

*Employees' Mutual Benefit Associations.*—These organizations have been of the greatest value in strengthening the ties between the electric railway and its employes. The idea is not a new one, for such organizations have been in existence for many years on important steam railway systems, such as the Pennsylvania and the Baltimore and Ohio.

The first organizations were prompted by the necessity of providing some relief for the unfortunate employe whose ability to earn his usual wages had been temporarily interfered with because of accident or illness. The old, and still much-used method, of "passing around the hat" is not only embarrassing to the employe for whom the solicitation is made, but a very great burden upon his friends who are charitably inclined.

The mutual benefit associations are usually independent of the railway company, although fostered and backed financially by it. By means of a small contribution each month the member employes make provision by which they will receive certain sums per day for sick and accident benefits. In the event of death a prescribed payment is made to the estate of the deceased employe. These associations have conferred untold benefits upon the employes of both steam and electric railways.

*Pension System.*—Many of these organizations have expanded and established a pension system by which an employe may be retired from active service at the age of 65 or 70. If an employe is permanently incapacitated by accident he receives a pension equiva-

lent to a certain percentage of his wages, based upon the number of years he has been engaged in the service.

*Employees' Saving Funds.*—Some roads, in order to encourage their employees to save money, have established a savings fund department. The employee can arrange to deposit a certain amount each month, and thus gradually, through his contributions and accrued interest, build up a very considerable bank account, without the necessity of going to or dealing with a banking house.

*Profit Sharing.*—Other roads, by means of a profit-sharing arrangement, endeavor to bring about a more intelligent interest of the employee in his work by dividing with him a certain per cent of the profits derived from the operation of the road. This incentive to closer relationship has not been tried on a sufficient number of roads or for a sufficient length of time to warrant any conclusions as to its success.

*Merit and Demerit System of Discipline.*—Perhaps the greatest cause for the lack of a close relationship between the electric railway companies and their employees is the system of administering discipline. Very few men, who have violated an order or rule, are ready to admit that they were at fault, and if, to their resentment at being so charged, a lay-off or suspension is added, they are very apt to become estranged and unruly members among the employees. During the period of suspension the employee is likely to get into bad company and become an undesirable citizen and a bad employee. In addition the loss of his wages causes not only suffering for himself, but also for his wife and children dependent on him. To avoid these things and to promote harmonious relations between the company and its employees many roads have adopted the merit and demerit system of discipline, the main objects of which are:

1st. To avoid a loss of wages by persons employed and consequent suffering to those dependent upon their earnings.

2d. To stimulate and encourage employees in the faithful and intelligent performance of their duties.

3d. To provide equal and exact justice to every employee.

4th. To provide a method by which years of faithful and satisfactory service may be considered and weighed in judging of any delinquency.

Under the system a stated number of demerits are entered against the record of each employee for the violation of each important rule. Where demerits are given for unsatisfactory service it

is logical that merits should be given for good service, and merit marks are credited to an employe whenever possible.

Employees are notified in writing of any favorable or unfavorable entry against their record, the reasons therefor, and the number of marks given. If any employe feels that he has been unjustly awarded demerits, he is given an opportunity to present his case in writing to the Discipline Committee at its next regular meeting, at which time his case is reconsidered and a correction of the record made, if this is found to be necessary and proper.

This method tends to remove the embarrassing difficulties which are presented when an employe is unjustly disciplined by some immediate superior. When an appeal is made to a higher official under the ordinary system a correction is hard to make, for, although the higher official may believe or know that the employe is in the right, he cannot take his side of the case openly, for by so doing he would cause the erring official to lose entire control of the men. All cases of discipline would in the future be appealed directly to the higher official. Under the merit system employes are permitted to state in writing why they believe they should not receive demerit marks, or may ask the merit board to reconsider its action if they are not satisfied with the rulings of the board.

This system necessitates identical treatment of all employes on all divisions of any property, especially where the merit board is made up of the superintendents of the different divisions. In many cases the different superintendents differ as to the discipline which should be administered. A majority vote of the board decides the question, thus usually securing the best possible adjustment, besides establishing a uniform practice. Questions which an individual superior officer would be at a loss to know how to decide are satisfactorily worked out through the combined knowledge of the members of the discipline board.

*Conclusion.*—It seems to be apparent that the keynote of the policy of most electric railways at the present time is the necessity for fair, impartial and humane treatment of their employes, caring for their physical comforts, and so treating them that a spirit of courtesy to the public and loyalty to the companies may be fostered. Not only is this policy commendable from a humanitarian standpoint, but it is conclusively demonstrating its value as a financial measure. The creation of an *esprit de corps* is a valuable asset to any company.

## THE STRIKE PROBLEM UPON ELECTRIC RAILWAYS

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BY DANIEL T. PIERCE,

Former Executive Assistant of the Philadelphia Rapid Transit Company.

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That something must be wrong in an industry where every year about one-third of the employes give up their work or are discharged is an unavoidable conclusion. This is the condition prevailing on all street railway systems in large cities. Every year these companies are compelled to employ and train from twenty-seven to thirty-three per cent of new men.

The reasons for this condition are obscure. The principal reason cannot be the prevailing rate of wages, for the *yearly* earnings of motormen and conductors, who average twenty-three cents an hour for about ten hours a day, are more than the yearly earnings of the most skilled trades-workers. The latter's wage rate per hour is, of course, higher, but employment on urban electric railways is steady throughout the year, while irregularity of employment is the rule among skilled workers. As nearly as the writer can discover, not more than half of the men who employ as motormen and conductors intend to make this work their permanent calling. Car service seems to be regarded as a makeshift until "a better job" can be obtained. The conditions of employment, the hours of labor, constant friction with the public, and, in short, the annoyances of platform duty appear to make it an undesirable employment from the viewpoint of the workingman.

Under such conditions, without the *esprit de corps* found among steam railway workers and the feeling of common interest that exists only among permanent employes, it is inevitable that labor disturbances, critical or subdued, rather than peace, should characterize the relations of street railway companies and their army of motormen and conductors.

### I

The recent conflict between the street railway company and its employes in the city of Philadelphia affords an opportunity to study the trend and results of labor disturbances in all their phases. The

great strike of February-April, 1910, had its source in the discharge of forty Philadelphia Rapid Transit Company employes in November, 1908. These men were removed from the service for "pernicious activity" in the attempt, then seriously begun, to unionize the company's 6500 motormen and conductors. Through the intervention of the mayor of the city in their behalf, the discharged men were reinstated upon their promise that their efforts at organization should not be, as they had been, a disorganizing force among the company's men and destructive of the discipline which is absolutely necessary in the operation of a railway.

These promises were not kept to the company's satisfaction. Organization of the men slowly continued, and on May 28, 1909, a mass meeting was held and a strike called. Just how many of the employes voted for this strike cannot be ascertained, but the officials in charge of the affairs of the union at that time subsequently told the writer that they had less than 425 paid-up members. Notwithstanding this, two-thirds, or four thousand five hundred, of the motormen and conductors went out on strike. The writer was in a position to know that very few of these men voted to strike or wanted to strike, but they would not work after a strike had been declared, and so run the risks and incur the odium that falls to the lot of the "scab." These facts may well be considered by street railway managers who comfort themselves with the belief that their men cannot be called out because they are not organized.

After a strike lasting seven days an agreement was reached as to the terms upon which the men should return to work. They had demanded the abolition of the "swing-run system," a three-cent-an-hour increase in wages; that they should be free to buy their uniforms from at least one union firm, and that grievances should be adjusted at regular meetings with "accredited representatives" of the employes. The company conceded the first demand, refused the increase of pay, specified five firms, one union, from which uniforms might be bought, and agreed to meet representatives of the men for the adjustment of grievances—the term applied to all complaints regarding discharges and suspensions.

An agreement was drawn up between the company, as party of the first part, and the "accredited representatives" of the employes, party of the second part. These accredited representatives were elected by the union employes of the company's nineteen barns,



or operating depots. They were all known to be union men, but signed the agreement simply as individuals, and not as representatives of Local 477, which is the Philadelphia branch of the Amalgamated Association of Street and Electric Railway Employees of America.

Under this agreement, which was finally brought about largely because of political pressure applied to both the men and the company, labor relations were maintained with surface friendliness for a period of about five months. In the fall of 1909 an upheaval occurred within the union, seven of the original "accredited representatives" were expelled and complaints were made that the company was violating the June agreement by meeting, for the adjustment of grievances, a committee composed of employes other than those who had signed the agreement. It was then claimed, for the first time, that there could be no conferences or relations between the company and its men except those carried on through the accredited representatives, or their successors, who represented the union element.

The committee to which objection was made by the union represented about two thousand five hundred members of the "United Carmen's Association," commonly called the "Keystone Men." The Amalgamated Association claimed that this was an outlaw organization, fostered by the company, and that there was gross discrimination by company officials in favor of the Keystone men, tending to disrupt and destroy the Amalgamated local. The Keystone men were mainly those who had remained loyal during the May-June strike; they were hated by the Amalgamated officials, and were always ostracised and not infrequently assaulted and terrorized by the more radical union element. It was insisted that these loyal men had no right to recognition in any form. This was the issue which really brought about the strike of 1910.

The company flatly refused to give exclusive recognition to the accredited representatives of the Amalgamated union, and this being insistently urged by the latter, conferences were arranged in January for the purpose of coming to a better understanding. At this time it was charged by the company, and became evident to every street-car rider, that breaches of discipline were the rule rather than the exception among the union carmen, who were easily identified by a button one and one-half inches in diameter worn by them. The

company's officials were flooded with complaints concerning incivility and other improper acts, which seemed to establish the presumption that the Amalgamated motormen and conductors were deliberately proceeding upon the theory that the more enemies they could make for their employer, the better their chances would be to bring the company to terms.

Unionism among Philadelphia carmen was a new thing. To many of them it spelled nothing more than freedom from discipline. Most of the union leaders tried to correct this misapprehension; they disclaimed responsibility for the insubordination of their followers, and frequently told the men at their meetings that they would lose instead of gain public support by the acts of which the company and the riding public bitterly complained. But in this and in other respects the leaders were unfortunate in having little control over their men. The organization, in short, suffered from the weaknesses of most labor organizations newly conscious of power and wholly mistaken and misled as to the best methods of achieving their aims. In fairness to the men it should be set down that their misconception of the attitude of the public toward their plan of campaign was largely the result of a false analysis of what they saw daily in their work. In Philadelphia, as elsewhere, the street railway employe feels and reflects the dissatisfaction of the public with the inevitable inconveniences and discomforts of street-car transportation. The men concluded from the grumbling and ill-temper of the riding public that it would countenance any course upon the part of the men, no matter how extreme. This mistake has been made many times in the last few years. To overlook this factor is to ignore one of the greatest difficulties with which street railway managements have to deal.

Efforts toward a better understanding were not helped by the adoption of a strike resolution on January 18th. This action was taken on a ballot which set forth that the company had violated the June agreement by receiving more than one grievance committee, and was attempting to destroy the union by discriminating against its members. There was some truth in the latter assertion. Subordinate officials of the company, such as division and street superintendents, in many cases favored the men who were loyal to the company as against those who were disloyal and troublesome and whose first allegiance was paid to the union rather than to the com-

pany. No number of general orders that all men should be treated alike could change this condition of affairs so long as the union man refused to work faithfully and in harmony with the non-union element.

The strike vote did not frighten the officers of the company, as the men evidently expected. They continued to refuse acquiescence in or even to discuss the proposition urged by the union that employes should be free to join but one organization, namely Local 477 of the Amalgamated, and that the company should have no dealings with any other body of its employes.

The company proposed that the agreement be modified by the insertion of the following clause:

Employes shall be free to join or not to join any organization and may present their grievances to the company individually, or, if members of any organization of employes, by a committee or the representatives thereof, and there shall be no intimidation or discrimination against any employe so doing by any official of the company or their subordinates.

This amendment at once became the crucial point in the negotiations. The principle it expressed is one that street railway managements must always insist upon and which the Amalgamated Association will always oppose, unless its policy is radically changed. The Amalgamated, as its officers repeatedly told the writer, cannot enter into any agreement which recognizes the existence of any other labor union, and this would be done if the Amalgamated, or any one representing it, signed an agreement containing the proposed clause.

The Amalgamated's policy, as it has been expounded by its highest officials, is first to secure the unhampered right of organization; then to bring into its membership the great majority of the employes of a system, and then, finally, to make an issue of the closed shop and of wage questions.

The sad experience of the street railway companies in San Francisco, Detroit, Cleveland and Pittsburg, which permitted this procedure, has convinced railway managers that the principle of the open shop must be maintained at all hazards. Once thoroughly organized and able to confront an operating company with a total suspension of service, the union is able to force wages up to a point higher than the earnings will bear. Dealing with the Amalgamated Association is, furthermore, very different from dealing with the conservative and ably led organizations which include the various

classes of steam railway employees. The street railway union suffers from the existence of the floating and irresponsible element quite as much as do the railways. It is therefore easy to understand why unionism is invariably resisted by electric railways while it is taken as a matter of course by steam railway managements.

The negotiations preceding the Philadelphia strike reached a complete deadlock, as already indicated, over the question of the exclusive recognition of the Amalgamated Association. It was evident that the men would sign almost any agreement, even including the sliding scale, which is so objectionable to them, provided they could obtain recognition of the union and the exclusion of any other body of employes from relations with the company. When it became evident that this would not be conceded by the company, the conferences were abandoned. Unrest and insubordination increased among the union element, and the crisis was reached when the company, on February 18th, discharged 174 men for various offenses, including intoxication, failure to register fares, disobedience of orders, and the harassing of non-union men.

These discharges were in the nature of an accumulation. Very few discharges had been made by the company during the conferences of January and February for the reason that the company did not wish to render a situation, already full of ill-feeling and antagonism, more acute. After the strike I acted as arbitrator of these cases, and recommended the reinstatement of 76 of the 174 discharged men. This recommendation, which was accepted by the company, was based not upon a showing that the discharges were unjustified, but upon representations that the men reinstated would not give further cause for offense. The men reinstated were mainly those who had good working records, but who had been active in harassing non-union men.

When, however, the union officials heard of these discharges they announced that the company had declared a lockout. It was stated that the leaders believed that 600 or 700 men had been discharged. Instead, however, of waiting to find out what were the facts, a strike was called February 19th at one o'clock in the afternoon, under the authority given to the local leaders by the vote of January 18th. In the strike order every union man was instructed to turn in his car upon reaching the barn "and allow it to remain there until the company will sign an agreement with us, guaranteeing

twenty-six cents an hour, and protecting us in our rights to belong to a union without being unjustly discriminated against."

Thus began a nine-weeks' struggle which cost the Rapid Transit Company \$2,395,000; cost the city many millions more, and resulted in the loss of a score of lives. The men lost about \$800,000 in wages. No one gained anything.

On April 25th, 3400 of the 4800 men who had gone on strike returned to work at the wage offered at the beginning (twenty-three cents an hour, increasing to twenty-five cents for men who remain in the service until 1914), without an agreement of any kind with the company, and having lost their seniority in the service.

That no basis of settlement could be reached after the strike had begun was due to the fact that the company would not submit to arbitration what it considered to be "inalienable rights." Its position was set forth in a letter to a body of clergymen who had urged the board of directors to arbitrate the matter in dispute. This letter said in part:

"There are but two real questions at the bottom of this strike:

"1. The right of our employes to deal directly with us without the intervention of an organization officered and controlled by outside men; and

"2. The right of this company to have the same freedom in hiring and discharging men that the men have in staying with or leaving the company.

"These rights are fundamental and inalienable and do not submit themselves to any form of arbitration. To surrender them to any outside interest would be to abrogate the management of the corporation, which duty the law imposes upon us as directors."

Terms offered from time to time by the company were either formally rejected by the men or refused informally by their leaders because they did not include exclusive recognition of the union, or, as the men put it, protect them in their union rights. The contest, it is evident, was one in which both parties preferred ruin to the sacrifice of what each considered to be a vital principle.

## II

Into this struggle was introduced a comparatively unused weapon, at least so far as the United States is concerned, in the form of a sympathetic or general strike,

Mr. C. O. Pratt, leader of the carmen, has represented this movement as both justifiable and successful.<sup>1</sup> As to whether or not it was justifiable, opinions differ. To the average mind the sympathetic strike appears to be a contradiction of every principle of right, justice, and expediency. If a labor contract in the building trade, for example, scrupulously observed by the employer, is to be broken by the employes because the street railway men go on strike, then labor contracts are comparatively useless. Mr. Pratt enlarges upon the solidarity among unionists which he thinks was brought about by the Philadelphia sympathetic strike, but he fails to consider how many tolerant, half-converted, and even friendly employers were convinced, by that strike, that fair dealing and good faith cannot be expected from trades unions. The greatest advance the trades union propaganda could make would be to secure the general acceptance of the principle of collective bargaining as to conditions of employment. This is impossible if relations are rendered unstable by general or sympathetic strikes.

As to the success of the Philadelphia sympathetic movement, there is not so much room for honest differences of opinion. Its beginning, course and effect can be briefly summarized:

On February 27th, the ninth day of the carmen's strike, a meeting of the Philadelphia Central Labor Union, comprising 127 locals, was held, and resolutions passed providing that if arbitration of the car strike was not brought about by March 5th, a general strike would be ordered. The resolutions stated that the general strike was a protest against the wrongs committed by the company and by the city authorities in its behalf, and "We pledge ourselves not to return to work until all rights have been recognized and complied with."

The car strike was not settled by arbitration or otherwise within the time limit set by the resolutions, and a general sympathetic strike was accordingly called, to become effective March 5th. The announcement was then made that "75,000 organized workers had quit their various employments in this city, to remain on strike until the Philadelphia Rapid Transit Company grants arbitration or effects a settlement with its striking employes."

It is impossible to say how many men and women went out

<sup>1</sup> *Annals of the American Academy of Political and Social Science*, Vol. XXXVI, No. 2.

under the general strike order. The Committee of Ten in charge of the strike issued grossly exaggerated estimates, running as high as 140,000. The police reports indicated that perhaps 35,000 strikers were out for a week, but the number steadily decreased after the first few days of the strike, until on March 27th, when the strike was formally called off, only a few thousand strikers were out. Some industries, notably the textile mills, were affected by the strike, but the life of the city as a whole was not seriously disturbed. As far as the transit company was concerned, it did not feel the effect of the sympathetic strike in any way. Judged either as a means of bringing the company to terms or as a demonstration of the solidarity and coercive power of organized labor, the strike was an absolute failure.

Upon this point the contemporary statements and opinions of the daily press are unanimous and conclusive. In its issue of March 16, 1910, the twelfth day of the strike, the Philadelphia "Record" said:

The general strike has already been demonstrated to be a futile as well as a senseless weapon for the coercion of the corporation against which the warfare was originally directed.

The Philadelphia "Press" of March 28th, the day following the termination of the strike, said editorially:

The sympathetic strike . . . never took a strong hold on the majority of the men appealed to . . . Their robust good sense would not permit them to join a movement to embarrass their own employers merely to show their displeasure with the employers of other men. It was too unreasonable and absurd a performance that was asked of them, so only a relatively few responded . . . The sympathetic strike did not have the degree of support necessary to make it successful.

Reviewing, on April 17th, the course of the carmen's strike, the Philadelphia "Public Ledger" in an editorial, said:

The (general strike) effort failed, as it must have done in a reasonable American community and after that the carmen's strike resolved itself merely into a question of persistence.

These statements show that we are safe in concluding that the sympathetic strike failed because those who were expected to be influenced and impressed by the general strike were not in sym-

pathy with it, and were not convinced of anything except that it was a complete failure. This failure was due in part to lack of leadership and organization, but mainly, in the writer's opinion, to the belief on the part of the great majority of workers that the general strike was unjustified.

### III

Lessons of great value may be drawn from the Philadelphia labor battle. One of these lessons is that no street railway company can, in any proper sense of the word, *win* a strike of its motormen and conductors, and for this reason, if for no other, such strikes should never occur. One hour's suspension of service on a system like that of the Philadelphia Rapid Transit Company means a loss in fares alone of \$2300. The losses of a strike of ten days' duration would equal the amount of a cent-an-hour increase in wages for a year. When the indirect losses, the antagonisms engendered, and the disorganization and disturbed morale resulting from a strike are added to the money loss, it becomes evident that a street railway can only win a strike at a cost greater than the value of any victory to be obtained.

As it can not be expected, on the other hand, that street railways will follow a policy of successive surrenders in order to avoid strikes, some other line of action must be sought out. The remedy will be found in the improvement and readjustment of working conditions on street railways. The first step in this direction should be to overcome, or at least to counterbalance, the real or fancied objections to street railway service so as to make it permanently attractive to a better class of workers.

Motormen and conductors are at present held at a dead level of wages and opportunity, except on those systems where the sliding scale, depending upon length and efficiency of service, prevails. A few roads have tried with success a merit and demerit system, carrying with it a bonus, or increase of wages, for faithful and efficient service. This line of policy should be augmented by every means, such as sick relief, death benefits, and welfare work, tending to attract and hold good men in the service. Such a policy is the best insurance against strikes and the best assurance of better service. At the present time the men and the managing officials of large systems, and the small electric system is becoming rarer every day,



are so little acquainted that a good understanding and mutual confidence is impossible. The large number of men constantly entering the service only to leave it after a year or less greatly aggravates this evil. Not until a fairly permanent body of employes is maintained shall we be on the road to a peaceful and satisfactory era in the street railway world.

## EDUCATING THE PUBLIC TO A PROPER APPRECIATION OF URBAN STREET RAILWAY PROBLEMS

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BY A. W. WARNOCK,

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Twenty years ago there was hardly a first-class street railway in the United States, judged by present standards, and consequently there were few, if any, of the many problems which face the average street railway company operating to-day. As street railways have developed, their problems have multiplied rapidly, which is what is to be expected when one considers that there is probably no business that comes into closer contact with so many persons in a community as these common carriers on our streets and highways.

We expect the street railway, as a matter of course, to provide us dependable service under all conditions of weather and under all stress of circumstances. We forget how well these carriers in all our cities are performing their service, never thinking how few times each of us has been seriously delayed on account of burn-outs of cables or power stations, snowbound tracks or breakdowns in wires or cars. We place absolute confidence in the street car, depending upon its daily punctuality and reliability to enable us to keep important business and social engagements.

But in spite of this responsibility on the part of the company to the public, and their dependence upon the company, there has grown up from year to year many important problems which, instead of being worked out in a spirit of mutual forbearance and helpfulness, have furnished the basis for misunderstanding and friction. The company's right to use the streets, the company's taxes, the extension or building of lines, the character of cars used, the system of heating and ventilation, the speed of cars, the system of transfers and transfer privileges, the question of fares and the frequency of service, are only a few of the many problems that stand unsolved to-day between the average operating company and the public it serves.

Admitting that there are many serious differences existing be-

tween the public and its servants, what should be the true relation between the two and what is the most sensible way to go about establishing such a relation? This seems to me to be the kernel of the question assigned to me for brief discussion.

I should say that the ideal relation should be one of mutual confidence in and respect for each other. Let the company properly appreciate that the public's wants should be given fair and courteous hearing and prompt decision. Let the public give the company the same decent consideration in all matters that one individual grants to another. First, let there be a basis of good faith established between the two and, after each understands the other's viewpoint better, perhaps the problems will solve themselves, or be settled by compromise for the mutual good of both.

Education of the public by the corporation of the latter's viewpoint seems to me to be a sensible remedy. Let the public know the ins and outs of your business, at least as regards any problem in which its rights are concerned, and perhaps the public will take a broader and fairer view of matters of which at present it may be ignorant.

*Education by Publicity.*—Everybody to-day believes in the immeasurable value of publicity in clearing up misunderstandings. At the present time almost every corporation, great or small, has its publicity department, organized not to give false or colored facts, but for the purpose of presenting its true position to its patrons. The old days when corporations preserved owl-like stillness on every subject have gone. To-day people want to know why. The public says to us in effect, let us know what you want and why you want it, and if you can convince us that you are right we will help you. There is no reason why any company should hesitate to respond fully to such an invitation and tell exactly what it wants and needs and what it will give in return, discussing the whole matter in an open, frank way.

I believe that the daily and weekly newspapers, the display cards in the company's own cars, and the company's folders and publications, offer the most effective mediums for conducting such a campaign of education. I would rather rely upon an announcement printed in the columns of a good, clean newspaper which is carried into the homes of its readers than upon any other means of directly educating the mass of the people. The value of such publicity can

scarcely be estimated or appreciated. I believe that such announcements, if prepared with the utmost care as to statements and attractiveness, can do more to develop a fine feeling of confidence between the company and its patrons than any other form of appeal. Of course, this broad statement is based upon the promise that the announcement rings true and fair and that the company's word stands for something when it makes promises in print.

Companies everywhere are following a plan of newspaper advertising when problems arise which require discussion with the public. I know of one company which tells its side of the case every time an important matter comes up. One day it discusses the question of taxation; another day fares; another day it argues out the policy of building new lines or extending old ones, of putting on more cars, of adopting new features in equipment, or of warning parents against accident features. In brief, it takes the public into its confidence, and puts each case squarely up to the patrons for a fair answer. The company's general manager tells me there has been developed a wonderfully fine feeling on the part of patrons since this newspaper educational campaign was begun some three years ago.

Companies have opportunity to supplement their newspaper campaign by inserting display cards in their own cars and announcements in their folders, time tables and other periodical literature. These measures need involve no great cost, and so the hue and cry of great expense to conduct a publicity campaign need not frighten the ever-watchful manager. A campaign of education, no matter how well conducted, however, has its discouraging features. There are roving the earth to-day many ultra "progressive" politicians who boast of their independence to the point that they are positively vicious when anything comes up for public consideration that has to do with any corporation. "Don't believe a word they say, it's not so," is the clarion cry they give out when any corporation raises its voice to defend itself. Then it sometimes happens that the few or the many, as the case may be, do not give the corporation a chance to be heard. Thus another chasm is thrown between the company and its patrons. The corporation asks, "What's the use?", and in the future treats the public as an enemy. Every corporation official devoutly hopes that Fate, with a large, up-holstered club of Titanic dimensions, will some day overtake these

political trouble-makers, or, as the Great African Hunter might say, "These bold, bad, mischievous mixers of black lies." It is hard, also, to convince the wise citizen who boasts in season and out of season that he takes everything a corporation says "with a grain of salt." I would classify this man as belonging to the "You can't fool me family."

A prominent eastern street railway recently spent \$25,000 on a publicity campaign, giving its reasons why it could not continue to develop if it had to reduce its rate of fare, which was ordered by the city council. The company claimed the order was illegal, as it conflicted with the terms of its charter, which had some years to run, and which had been ratified by the state legislature.

The company took one whole page in six daily papers every day for one month, and told a hard-luck, almost "tear-compelling," story, which was the talk of the town. These pages told of the company's early vicissitudes and explained all the hardships and heartbreaks incident to building up a new road in a new land in panicky days when money was needed and hard to get. They told of panics wiping out profits and dividends devoured by disasters; how for twenty years stockholders had gone without a cent earned on their money invested and how the company had faced bankruptcy so many times it had become an old story. Finally, after twenty years of leanness and want, brighter days had come and dividends had been paid at the same rate the savings bank paid! The question was then put up to the public squarely: Do you want a constantly improving service at present rates, or do you want a constantly depreciating service at lower rates? The educational campaign was a series of stories telling real chapters of business, and explained, with diagram and figures, the company's history, its troubles and what was in store for it and for the public in the future if its fare was reduced. Frankly, the company said: "Let us get together and see if we cannot settle this out of court," for the case had gone to the Supreme Court of the United States by this time; "let us see if we cannot arrange matters and make any compromise other than reducing the fare."

The wise politicians seized this chance to suggest loudly in open meetings and in printed pamphlets that the company was not telling the truth, although any of the statements could have been checked and easily verified. They declared that the public "had the

company scared and on the run," and exhorted their hearers not to concede anything to the company or to make any compromise trade, but to "stand pat" upon the original demand. Bad feeling was engendered, and the company, seeing that it was not trusted, withdrew its offer of settlement. The case went to the Supreme Court and in a short time was decided in favor of the company on all counts. The public, having listened to the wise politicians, had lost a good chance to trade.

While it is obviously impossible to arrive at any authoritative conclusion concerning the reasons for the failure of the publicity campaign in the case just cited, yet it is interesting, and perhaps instructive, to examine into the causes which militated against its success.

A most potent factor was doubtless the lack of a feeling of trust and confidence between the company and the public. Rightly or wrongly the public were suspicious of the company, and were not willing to accept its statements at their par value. This feeling of skepticism was carefully cultivated by the politicians, who thought they saw an opportunity to make capital out of the situation.

It must not be inferred, however, that because a particular publicity campaign fails to attain the desired objects, that publicity is a weapon of doubtful value in settling differences between the public and the street railways. It pays a company to tell its troubles frankly to its patrons. The differences of opinion between the public and the company are largely due to the misinformation upon the part of the former.

It is the province of a publicity campaign to destroy false impressions and to give to the thinking portion of the city's population the information necessary to a formation of an intelligent opinion. To those who read with an open and receptive mind, any good newspaper, window card or folder is a valuable agent in assisting the corporation.

The effectiveness of the publicity campaign depends largely upon the public attitude of mind at the time at which it is inaugurated. It can only succeed where a sense of mutual regard and trust has been established. The company's promises and its statements will only be accepted if its reputation for fair dealing with the public has been earned by its previous acts. If the corporation has so lived that it has earned respect for its sincerity and the truthfulness of

its statements there is no reason why a publicity campaign, properly conducted, should fail.

I believe that most public service corporations are doing and trying to do the decent thing by their patrons and their communities, and that in consequence a better understanding is being effected between them. The ethics of corporations, like the ethics of all business concerns, are measurably higher at the present time than they were fifteen or twenty years ago. It is not fair, therefore, to condemn a corporation because of mistakes made in the lifetime of previous generations. A corporation's sincerity should be judged from its acts during recent times. The keynote between the patron and the company in all matters should be mutual co-operation for the benefit of both. "Let us get together" is the twentieth century keynote in the relation between the big and the little, the server and the served, the few and the many. It is the spirit that must prevail in the hearts of both parties before any campaign for education on any subject can be successful.

## THE PRESENTATION OF INTERURBAN PROBLEMS TO THE PUBLIC

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By A. D. B. VAN ZANDT,  
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It is generally recognized by street railway men and financiers that the success or failure of an interurban project depends largely upon the effectiveness of the appeal which the line makes to the public. The publicity problems of the interurban are so peculiar and vary so between different localities as to require the highest order of ability on the part of the publicity manager in their presentation. While almost every other part of the electric railway field has been reduced to standards, having a general application under all conditions, the field of publicity still remains intensely individual.

The technique of operation and the rules and regulations enforced upon the various railways are happily coming to a common basis. The operating official from one line, on joining forces with another interurban road, soon finds himself acquainted with the methods of his neighbor.

Publicity plays a most important part in the success of an electric railway. Not only must it be relied upon to stimulate and develop passenger, freight and express traffic, but it is generally recognized that it is the most potent weapon in the possession of the railway to secure a satisfactory solution of the most vital of present day interurban problems—how to secure a satisfactory return upon this class of investments.

When electricity came into being as the motive force for trolley cars it was the belief of many that the cost of doing business would be greatly below what eventualities have proven possible. In the optimism that prevailed it was widely believed that the only thing to be done was to substitute motors for horses and string up a few wires, and so save the cost of feeding, the cost of care, the heavy depreciation resulting from the short life of the animal power, besides gaining much in the way of speed. The interurban lines of



the older companies were at first nothing more than extensions of city lines, and were intended as feeders to the town or city service. In building these lines out into the country every political division of territory, such as villages and townships, had to be dealt with separately, each giving a right to operate only through its own territory and each making its own local rate of fare. The township of A had nothing in common with the township of B, nor was B in the least concerned with the proposed relationship between the interurban line and the municipality of C. What each wanted was a service from farm to farm, or from farm to town, with local stops wherever the passenger might be. Perhaps I should not have said what each wanted, because in many cases the attitude was merely one of toleration, with much doubt as to whether the new-fangled mode of locomotion would be successful, and still greater doubt whether it would not be an actual detriment to the public good.

In almost all fields of commercial endeavor, and more especially where the product is to be consumed—as for instance in the making of gas—it is reasonably easy to fairly determine at the outset the cost of production. The interurban railway man, unable at the beginning to determine the cost of a ride, calculated it to be less than it has proven to be, with the result that he has been selling cheaper than he should. Not only were the pioneers in the field of electric interurban transportation deceived in the belief that the mysterious application of electricity would cut the cost of transportation to almost nil, leaving great profits from rates that have since proven to be ridiculously low and not sufficient to make any returns upon the original investments, but the development of the business has added greatly to the burden of the carrier.

Bearing in mind the original intent of these interurban lines—the giving of purely local interurban service—and following the development down to the present day, this burden can be easily appreciated. Horse cars were fitted with motors, then it was found necessary to build larger cars to carry these motors with any degree of safety, and then the larger and stronger car body needed more powerful motors to obtain any degree of speed and guarantee any certainty of service. For the public convenience in the local service the tracks were laid upon the highways twisting and dipping with the roads. These tracks were at first cheaply constructed of thin

bands of iron upon light cross ties laid in the mud. As the cars grew in size and the tracks pushed their way farther into the country to distant settlements it was found that the location of the tracks upon the highways was not fitting for the new service demanded. The highways were too narrow, poorly drained and lacked proper gradients. As the country settled up, largely as a result of the convenience of the new method of transportation, the highways became overcrowded and so new tracks of heavier rails and with proper gradients had to be built upon private right of way purchased at growing prices, because of the enhanced values made by the very presence of the interurban lines. And so the thing has gone on, until to-day we find rails as heavy as on the best steam roads, large, powerful, palatial cars, bigger power houses and more intricate overhead equipment, greater frequency of service, and a speed of operation undreamed of in the earlier days. Type after type of equipment has been discarded, as the result of the progress of invention, before it has had an opportunity of earning its life's value.

In spite of all these things, however, and of the increase in the cost of material and in the operating expenses, the old contractual relations as to the rates of transportation, and the police regulations are still in existence. Under the glow of expectations the interurban lines have spread their network of tracks, but now the glamor has died away; the builders are not so anxious to find places to which to go as are the people to have them build. The cold douche of experience has checked the ardor of the financial world until such time as the man who rides more fully understands what it costs the other man to make the ride possible.

And to understand this is difficult without study. The man who wants to ride knows that the man who makes possible the ride has in times past offered a ride to other people at a certain price, and he looks with doubt upon the claim that there must be a new deal. He forgets that the ride he wants is not the ride of the years that are past.

That there is a difference is the one great interurban problem of traffic to be presented to the public. And how is it to be presented? By publicity in all that the word means. The American public is not only fair-minded; it is generous, but it does not desire to be hood-winked nor cheated. It does not wish to purchase its

wares at a price, knowing it means ruin, because it realizes that such a condition leads to a shoddy article, whether that article be a coat or a car ride. It is equally true that the American public has no stomach to pay more than a just price.

Now all this information can be given by the interurban lines by specific history and tables of costs and revenues, but above all what is needed is a scientific study and consideration of the whole matter, without prejudice, by the people themselves. The company that cannot stand the white light of publicity, which must come sooner or later, will be obliged to purge itself and confess its sins before repentance is believed. As I said, however, in the beginning, these problems differ somewhat in different communities. What I have pointed out concerns more particularly the interurban lines early in the field, for from the pioneer work in Michigan others have profited.

The second important duty of the publicity department is to bring home to the public the immense advantages which have been conferred upon them by the interurban lines. People are so used to taking for granted new changes and improvements that in a few months, or years, they forget the conditions which prevailed before these changes came into existence. Out of this forgetfulness grows a large amount of the apathy which is responsible for the failure of electric railways to secure just changes, when they become necessary.

While the interurban railway builder and operator has been learning his lesson of cost the benefits to the public served have grown apace. In the great interurban railway centers like Indianapolis, Toledo, Cleveland, and Detroit the people, through the constant use of the country trolley for business and pleasure, have gained a better understanding of farm life. These men of the city do not look upon the farmer as the joke "Hey, Rube," but as the man who feeds us all. They do not look with pitying glances on the man with the hoe, but rather are envious of the man of broad acres who, with the modern machinery at his command, has as it were but to press the button and watch the land come to life with the fruits of the soil. The farm is not the thing the city man wants to shun; it is the reverse, for deep in his heart is the hope that some day he, too, will be able to retire to his own acre of peace and plenty.

Similarly those of the farm and village have been brought into close and kindly touch with the city. They know the stores, they know the parks, they are even not unacquainted with the latest play. The farmer is no longer obliged to spend two or three days of his own time and that of his team in the task of marketing his produce at a price unknown until delivery is made, but to-day, through the agency of the interurban trolley that makes possible an extensive system of rural delivery of mail, the farmer gets his daily newspaper, knows early the price he can get for his product, places his product on an interurban express car, follows himself by passenger car, and in as many hours as it formerly took days he makes his sales and his purchases.

Much of the opposition to the interurban railway has come from the villages, under the belief that a frequent service would spell mercantile ruin, and here and there this opposition still exists. I quote from a recent edition of the Birmingham (Michigan) "Eccentric," to show the change:

"When the trolley was first established it was claimed it would ruin the smaller towns, the reverse is true. Look over the following census figures and you will note that every town in Oakland county not reached by an electric road has been steadily on the toboggan for the past twenty years. On the other hand, towns having an hourly service or less have held their own or shown only a slight increase, while the section served by the Pontiac line, with its thirty- and twenty-minute service, has absorbed more than the actual net increase in the county."

The truth is the interurban line is not a deterrent, but an aid to the small town. It does not of necessity cause all towns to become manufacturing centers, but it does give them better facilities to become such. The interurban line modernizes the trading post, giving the country merchant the same ease in making his purchases as has the corner store keeper in the city, and the same privilege of making these purchases as he wants them and in the quantities he wants. There is no longer the necessity of stocking up for the winter because of impassable road conditions. To-day the interurban grocery delivers to its customers strawberries just as early in the season as does the city grocery.

Before the advent of the interurbans the course of trade was from the village to the city. To-day it runs equally from city to

village as from village to city. Making use of the interurban car for his pleasure trip out into the country, the city man picks up his bargains in the way of butter and eggs and even in staple groceries. A full lunch basket out into the country means a full basket of supplies back into the city.

All these things can be brought home to the fair-minded public old boundary limits of business and pleasure have been abandoned and new ones made further out, just as far as the streaks of steel reach. Where such a space-eating and comfort-bringing institution prevails the outside man must treat his trolley line as his good friend and servant. He must realize that it is not a political institution and that it must not be made a political football. He must realize that it affords him so many conveniences; that of the many necessities he has to-day it would be one of the last he would abolish, and finally he must realize that enough must be paid for the service to make it efficient and give a decent return to the capital invested.

All these things can be brought home to the fair-minded public through effective publicity. If this is done, the public is constantly reminded that the interurban railway is in reality a partnership between them and a set of stockholders; that the stockholders receive their return in the form of dividends, while the public receives its return in the form of good service and all the advantages which this brings with it. If this idea can be firmly implanted in the public mind, and if, in addition, it can also be shown that good service is not possible without satisfactory financial conditions, the publicity man has won his fight and incidentally placed his road upon an assured financial footing.



PART TWO

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*Public Regulation of Electric Railways*





## VALUATION OF INTANGIBLE STREET RAILWAY PROPERTY

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The intelligent regulation of street railway fares, taxation, capitalization and service depends upon the possession of accurate information concerning the value of the property under investigation. Without this knowledge, the governmental authority can do nothing more than form a more or less accurate guess as to the solution of the problem, based largely on *ex parte* testimony, and this, in some cases, will not be just to the company and in some, to the traveling public.

The importance of an accurate valuation of street railway property is now universally recognized. An examination of the history of the serious efforts to place a valuation upon street railway property discloses, in recent cases, a development in the methods of valuation, and the formulation of certain rules and practices which are now becoming standardized.

The valuation of tangible property is an engineering matter of comparative simplicity. An engineer of experience can ascertain, in detail, the expenditure required to duplicate a property having the same physical standards as the one under investigation.

The valuation of intangible property is more involved. The things to be valued are difficult to measure by definite standards, but must be appraised generally by indirect and, in many cases, by inductive methods.

In distinguishing between tangible property and intangible property of the street railway company, the publicly accepted method has been to call one physical property and the other franchises. A careful consideration of the subject, however, will show that there are other items besides franchises which should be included in the term "intangible property."

Physical property is fairly easy to label, inventory and value, so that, it is believed, a correct understanding of the term "intangible

property" can best be had by subtracting from the total property that which is physical, or tangible.

### *Tangible Property*

The physical, or tangible, property includes land, construction, equipment and cash, or its equivalent. If these items are being valued on the basis of either the original cost or the cost of reproduction, they should include the cost of acquiring land, the cost of supervision and administration of the construction by the general contractor, the sub-contractors, the engineers and the company's executive organization. In other words, all labor and expense going to make up the construction of the finished whole should be included, whether this labor be that of day laborers, foremen, superintendents, contractors, engineers or officers and employees of the company. The expenses of such construction work should also include all contingent expenses in connection with such labor, together with such items as interest and taxes during construction, and other overhead charges. In some cases\*the cost of acquiring land, the administration of construction work by the company's organization, the general contractor's services, engineering expenses and interest and taxes during construction have been considered as intangible property, this distinction being due, presumably, to the fact that in estimates of cost of reconstruction these items have been arrived at by the use of round percentages. Such labor and expense, however, are essential features of the cost of construction and equipment, and consequently belong, strictly speaking, to the tangible property. Stock, tools, supplies and working capital, in whatever form it exists, are also part of the tangible property.

A list of the principal items which enter into the cost of production of the tangible, or physical, property comprises the following:

#### *Work and Expense Items Forming the Tangible Property of a Street Railway*

- I. Company's overhead charges upon construction.
  1. Executive organization's work and expenses, including:
    - a. Accounting expenses.
    - b. Office expenses.
    - c. Storeroom and stable expenses.
    - d. Permits of authorities and city inspection.

2. Legal work and expenses.
  3. Technical work and expenses.
    - a. Company's engineering organization.
    - b. Consulting engineers.
    - c. Architects.
    - d. Testing and outside inspection.
  4. Interest during construction.
  5. Taxes during construction.
  6. Wear and tear during construction.
- II. Land, including private right of way and sites for power-houses, car barns, shops, terminals, etc.
1. Assessed value.
  2. Additional market value for ordinary purposes.
  3. Additional value for railroad purposes, including:
    - a. Plottage.
    - b. Contiguity factor.
    - c. Special value for railroad purposes due to location.
  4. Overhead charges for acquisition of land, such as:
    - a. Brokerage.
    - b. Legal work and expenses.
    - c. Technical work and expenses.
    - d. Title insurance.
    - e. Loss on portion of site not necessary.
    - f. Loss of buildings discarded.
- III. General contractor's overhead charges and profits.
1. Work and expenses of contractor's general organization and office.
  2. General superintendence, watching and lights.
  3. Fire, accident and liability insurance during construction.
  4. Maintenance and use of tools.
  5. General contractor's profits.
- IV. Material and labor, comprising the physical construction and equipment, as furnished by the sub-contractors.
1. Inventory, priced on basis of sub-contracts.
  2. Extras, incidentals and contingencies.
- V. Stock, tools and supplies.
1. Inventory, priced.
  2. Incidentals.

## VI. Working capital, including:

1. Cash on hand.
2. Accounts and bills receivable.
3. Prepaid accounts.
4. Land and buildings not used in operation.

*Intangible Property*

All of the remainder of the corporation's property should be considered, as intangible property.

From the standpoint of value, the intangible property represents the total value of the company from a business standpoint, less the value of its physical property. From a standpoint of cost, either first cost or cost of reproduction, the intangible property represents the cost of acquiring rights and capital for producing the tangible property and for placing the company in a potential position for doing business efficiently as a going concern.

*Intangible Property from the Standpoint of Cost*

From the standpoint of cost of production through the period of development, the intangible property will include many, or all, of the following items:

*Work and Expense Items Through the Period of Development  
Forming the Intangible Property of a Street Railway*

- I. Promotion of the enterprise.
  1. Work and expenses of promoter's organization.
  2. Preliminary legal work and expenses.
  3. Preliminary technical work and expenses.
    - a. Survey and location of line.
    - b. Estimates of construction cost and of income and expenses.
    - c. Preparation of prospectus.
  4. Profits of promotion.
- II. Corporate organization.
  1. Legal work and expenses.
    - a. Incorporation.
    - b. Details of perfecting legal organization.
    - c. Form of securities.
    - d. Mortgages.

2. Executive organization's work and expenses.
  - a. Directors', officers' and employes' work and expenses (until commencement of construction).
  - b. Office and general expenses (until commencement of construction).
  - c. Engraving securities.
  - d. Registration and certification of securities.
- III. Franchises and consents (often under conditions of competition).
  1. Property owners' options and consents (for location and for change of motive power).
    - a. Executive organization's work and expenses.
    - b. Legal work and expenses (vacations of injunctions, etc.).
    - c. Technical work and expenses (surveys, maps, etc.).
    - d. Payments for consents.
  2. Franchises and consents of municipal authorities (including municipal legislature, mayor, borough presidents, commissioners of bridges, parks, docks, highways, water supply, sewers, etc.).
    - a. Executive organization's work and expenses.
    - b. Legal work and expenses.
    - c. Technical work and expenses.
    - d. Payments for franchises.
      - A. Lump sum.
      - B. Capital expenditures under governmental requirements for property, the title of which does not vest in the company, such as:
        1. Grading and widening streets.
        2. Removing sub-surface street obstructions.
        3. Paving.
        4. Track and overhead line constructed on municipal property, such as parks and bridges.
        5. Change of location of track or line, due to governmental requirements.
  3. Consent of state utilities commission.
    - a. Executive organization's work and expenses of presenting project.



3. Extra cost of construction, due to non-interference with operation.
4. Solidification of roadbed.
5. Adaptation of construction and equipment.
- V. Development of company's business.
  1. Losses of early operation.
  2. Losses of outlying sections of line.
  3. Perfection of executive organization and business methods.
  4. Development of park amusement enterprises.
- VI. Consolidation with and control of other corporations.
  1. Corporate consolidation.
    - a. Executive organization's work and expenses.
    - b. Legal work and expenses.
    - c. Payments to state or city.
    - d. Payments for securities.
    - e. Tangible or intangible property of merged corporation which is superseded by consolidation.
  2. Leases of other corporations.
    - a. Executive organization's work and expenses.
    - b. Legal work and expenses.
    - c. Payments to state or city.
  3. Investments in securities of other corporations.
- VII. Financing.
  1. Work and expenses of promoter and associates in negotiation and underwriting.
    - a. Preliminary promotion syndicate or association.
    - b. Stock underwriting syndicate.
    - c. Bond underwriting syndicate.
  2. Sale of securities.
    - a. Permission for issue from state, state commission or municipal authorities.
      - A. Executive organization's work and expenses.
      - B. Legal work and expenses.
      - C. Technical work and expenses.
    - b. Financial negotiations.
      - A. Executive organization's work and expenses.
      - B. Legal work and expenses.
      - C. Technical work and expenses.

c. Payments of commissions to bankers and brokers, representing their work, expenses and profits.

d. Discounts on securities.

VIII. Patents and licenses.

1. Development of inventions.

2. Purchase of patents or licenses.

IX. Interest on work and expense items of intangible property until commencement of operation.

It may be questioned, however, whether a number of the above items should appear in the capitalization of the enterprise. In many cases they have been charged against early income or later profit and loss. As an established industry to-day, it would seem that the allowable return should be high enough to permit the gradual writing off of some of the features of original cost. It would not appear just, however, to present security holders to discredit or destroy capital which was fairly expended for these items, especially if the history of the corporation shows that after deducting profits commensurate with the return on other kinds of business, it would not have been possible to amortize this portion of the principal.

It will be noted that the cost of producing the "going concern" value is included in the above list under items such as "solidification of roadbed" and "adaptation of construction and equipment," under the general heading of "development of technical standards," and also under the heading of "development of the company's business."

In considering the cost of reproduction new of the intangible property, some of the items in the above list disappear. A detailed treatment of this feature will appear below.

• *Intangible Property From the Standpoint of Value*

In appraisals, whether for the acquirement of the property by the municipality, for the fixing of rates, or for the assessment of taxation, the value of intangible property has often loosely been referred to as the value of the franchises, and in such cases the term "franchises" will be understood as synonymous with "intangible property," although, speaking accurately, the latter term includes much more than the former.

Typical instances of valuations of intangible property of street railway systems are furnished by the appraisals in Detroit in 1899,



Chicago in 1906, Cleveland in 1908 and 1909, and Detroit again in 1910.

*The Detroit Street Railway Commission Valuation of 1899*

One of the first valuations of American street railways took place in Detroit in 1899, under which the State, through a commission headed by Gov. H. S. Pingree, proposed to authorize the city of Detroit to purchase the railways for municipal ownership and operation. The appraisal of the physical property was made by a board of experts, headed by Prof. M. E. Cooley, and totaled \$8,000,000. The value of the franchises was fixed by Prof. E. W. Bemis at \$8,478,563. His computation was made on the basis of capitalizing the net earnings for the remaining life of the franchises after allowing four per cent. annual increase of earnings and deducting four per cent. interest on the \$8,000,000 of physical value. In this case the ratio of this intangible value to the value of the physical plant was one hundred and six per cent.

*The Chicago Street Railway Valuation of 1906*

In the Chicago case the franchises for some parts of the track had expired, and for other portions lasted for various periods. The expert commission representing the city, headed by B. J. Arnold, apportioned the earnings of the system by franchise expirations on the basis of car mileage operated over each track franchise. The future gross earnings of the unexpired track franchises were then estimated on the basis of an assumed rate of growth of the business until the expiration of the franchises. From these were subtracted the estimated operating expenses, including taxes, based on the present cost of operation. From the resulting net earnings was deducted interest at the rate of five per cent. on the estimated value of physical property corresponding with the franchise section, which physical property was proportioned in accordance with the car mileage operated over each franchise. The resulting net income of each franchise was then discounted as of the present date and capitalized at five per cent.

There was a dispute as to the length of the remaining franchises, and the valuations submitted to the City Council by its experts were based on various franchise periods from twelve months to thirty-six months. The total value finally agreed upon for all of these prop-

erties was \$50,000,000, which corresponds most nearly with the value of the property if the franchises are given an average remaining period of eighteen months. On this basis the total value of the physical property, including paving, is \$41,977,811, and the value of the intangible property \$9,016,971, making a total value of \$50,994,782. It will be noted that the value of the intangible property in this case is over twenty-one per cent. of the value of the physical property.

As a matter of fact, the proportion of intangible property in the final value was considerably more than this percentage, due to the fact that the cable systems were valued largely as going concerns. If the cable property, however, was valued according to its availability in converting these lines into part of an electric system, there would be deducted from the physical value \$4,794,618. Reducing the physical value by this amount, and adding the same amount to the value of the intangible property, would result in values of physical property of \$37,183,200, and of intangible property of \$13,811,582, so that on this basis the intangible value represents over thirty-seven per cent. of the physical value.

The experts of the city also included in their physical property valuation an item of ten per cent. upon the total construction cost to cover the general classifications of (1) legal expenses, including those incurred in securing right of way and frontage consents; (2) interest during construction; (3) brokerage, or the expense of securing the necessary moneys; (4) contingencies and other items of expense. This allowance is generally believed to have been insufficient.

Part of these expenditures undoubtedly belong under the heading of intangible property, and if we assume that Items 1 and 3, or one-half of this ten per cent., were so classified, we add \$1,690,145 to the intangible value, which thus becomes over forty-three per cent. of the physical value.

#### *The Cleveland Street Railway Valuations of 1908 and 1909*

In the Cleveland valuation of 1908, the negotiations were conducted by Mayor T. L. Johnson, for the city, and F. H. Goff, for the company, and the physical valuations were made by committees headed by A. B. du Pont and H. E. Andrews. The value of the physical property, after deducting depreciation, was found to be

\$15,034,614. This amount included a charge for the legal organization of the company, which should be classed as intangible property, amounting to \$40,000. Deducting this sum would leave the net physical value \$14,994,614. The value of the franchises and good will agreed to was \$8,954,985, to which we should add the above-mentioned \$40,000, giving an aggregate total intangible value of \$8,994,985. In this case, therefore, the ratio of intangible to physical property was sixty per cent. This ratio is probably larger than it should fairly have been, as the physical value was unreasonably lowered and depreciated.

Judge R. W. Tayler, who was the arbitrator in the final settlement of this Cleveland valuation in 1909, recognized this low estimate of physical value by increasing the estimate as of the same date (January 1, 1908) to \$17,511,856. He reduced the intangible value, however, on that date by decreasing the franchise value to \$3,615,844, and eliminating entirely the item of "good will," and transferring the item of "going value" to the classification of "physical property." After shifting the \$40,000 of intangible value mentioned above from the physical to the intangible value, we find that the ratio of intangible to physical value is twenty-one per cent. This figure, however, would be further enlarged if it were possible to secure the details of certain items included by Judge Tayler in his physical value, inasmuch as he added a general overhead charge of fifteen per cent. to include a number of development expenses, some of which, such as financing, organization, consents and litigation with property owners, would come under the class of intangible property as above defined. It is probable, therefore, that the ratio, under Judge Tayler's valuation, is considerably over twenty-five per cent.

#### *The Detroit Street Railway Commission Valuation of 1910*

The valuation of property of the Detroit United Railway, made in 1910 by the committee of fifty appointed by Mayor Philip Breitmeyer, has created much interest in the street railway world. This valuation of physical property was made by a number of experts, under the supervision of F. T. Barcroft, who found that the total value of the physical property was \$11,121,725.

The valuation of unexpired franchises was made by Prof. H. C. Adams, and amounted to \$2,810,615. This was based on the some-

what inaccurate method used in the Chicago franchise valuation, of proportioning gross earnings by franchises on the basis of the car mileage operated over each franchise. It also allowed for no increase of gross and net earnings during the remainder of the franchises, which in some cases did not terminate for twenty-five years. The ratio of intangible to tangible property as thus developed is equal to slightly over twenty-five per cent.

Professor Adams also presents an estimate of the value of these franchises on the basis of assuming six per cent. increase of gross earnings per year of the unexpired term. On this basis the franchise value would be \$4,246,208, which would equal over thirty-eight per cent. of the physical value. This ratio, however, would seem to be somewhat larger than fairness would justify, as the valuation of the physical property made by the experts of the company was \$24,676,182, or more than double the Barcroft valuation.

*Intangible Property From the Standpoint of Cost of  
Reproduction New*

In order to view the subject of value of a street railway property from the standpoint of cost of reproduction, the usual method has been to endeavor to ascertain the cost of reproduction of the physical property, depreciated to present condition. For some uses, such, for instance, as in a rate case, it is believed to be fairer and more satisfactory to ascertain the cost of reproduction new of the entire property. This is the amount which a competing enterprise would cost to produce and upon which its rate of fare would be based. The public is not interested in the amount of depreciation of physical property if it is well maintained in condition to give good service. There would be an economic waste if such depreciation were repaired.

It has been suggested that the normal depreciation which is present in every operating property be regarded as an offset to the "going concern" value of the property. A street railway property, upon the commencement of operation, has to go through a period of adaptation of the component parts of the physical construction and equipment, both as to each other and as to their joint uses in the business, whereby the mistakes of design and construction are eliminated. Similarly, the legal and executive organization of the company must be got into smooth and efficient working order,

and furthermore, what may be most important, the business and income of the company must be developed through a period of at least several years to a point which will prove the success of the company as a profitable enterprise. This assurance of its technical, operating and business practicability is the "going concern" value of the property. If, therefore, the "going concern" value equals the amount of depreciation, we arrive again at the cost of reproduction new as an important and in some cases a controlling element in the valuation of a street railway property.

The items forming the cost of reproduction new of the physical property have already been considered. In order, however, to produce this tangible property, it is necessary to reproduce both the rights under which it is constructed and by which it may operate, and the financing which pays for the production of both tangible and intangible property.

For any given company or system we must imagine that the streets are clear of its tracks and that we begin with the inception of the enterprise in the mind of a promoter or business pioneer. This man and his associates, for the development of the enterprise up to the construction period, in the case of a large company, will employ a working force of lawyers, engineers and an executive organization. The securing of public rights and private capital, often under conditions of competition with other transportation interests, must be considered from the standpoint of local conditions, customs and laws.

*Inventory of Work and Expense Items of Reproduction of  
Intangible Property*

It is believed that the first instance that this theory has been worked out in careful detail was the Coney Island fare case of the Coney Island and Brooklyn Railroad Company, before the Public Service Commission of the First District (New York City). As technical advisers to the company, my firm there made up a list, or inventory, of the work and expense items comprised in the reproduction new of the intangible property of that company. This inventory, in brief, sets forth the time and expense items of all departments of the organization, of the promoter and of the company, first, during the promotion period, or time of obtaining rights and capital, and then during the construction period, or time of

expenditure of capital, to the completion of construction. These items are separated as between the promoter's organization, the legal department and the technical department, through the preliminary development of the idea, the formation of the promoter's syndicate, the securing of the corporation's charter and the obtaining of its franchise from the municipal body and of its certificates from the Public Service Commission, together with the property owners' consents and those required from the minor city departments and other corporations. The time spent in connection with financing the enterprise is largely co-extensive with that of obtaining rights and comprises the various steps of underwriting and negotiating the sale of securities. After the franchises and capital are obtained, the construction period begins by the organization of the permanent working force of the company, and continues through the general administration of the construction work by this executive organization to the completion of construction. This inventory, as submitted in the case, is reproduced on pages 134-140 as Exhibit No. 1.

#### *Time of Reproduction*

In order to determine the time spent on each part of this work, and the contemporaneous nature of a large part of it, there was prepared a chart of estimated time of reproduction sub-divided as between the various departments. The estimated time taken for each part of the work was based upon the actual time which has recently been required to secure similar rights in New York City under present legal restrictions. It was estimated that three and one-half years would be required from the inception of the project to the time that capital and rights would be obtained. The construction period was estimated, from instances of recent construction work, to require two years and ten months' additional time, making a total of six years and four months, although the beginning of partial operation was assumed to take place one year before the end of construction. The chart of estimated time of reproduction is shown opposite page 140 as Exhibit No. 2.

#### *Estimated Cost of Reproduction*

The number of men in each department and their rates of pay were then assumed, producing, when allowance had been made for general expense items, the total expenditure in each department and

for each part of the work. All of this was, as far as possible, based upon actual similar work and expenditure of other corporations. The resulting estimated cost of each general item of the tangible and intangible property is shown in Exhibit No. 3 (page 141).

In this case the ratio of intangible property to tangible property is \$779,700 to \$8,520,198, or slightly over nine per cent. There are, however, a number of items, such as profits of promotion, discounts and commissions on sale of securities, etc., which were specifically excluded in this estimate, as it was claimed that these items should be allowed for in a rate of return higher than the interest rate of six per cent., rather than in a principal value. For these items, the experts of the Public Service Commission estimated the minimum cost of reproduction at \$976,490, and the maximum cost at \$1,973,938, equivalent to over eleven per cent. and twenty-three per cent., respectively, of the above cost of reproduction of tangible property. The same reasoning would apply to other items for which no claims were made by either side, such as features of value of the present franchise of this company that cannot be reproduced, the cost of development of the business, represented by the deficiency below a reasonable return due to deficits of early operation, and the cost of development of technical standards, comprising obsolescence of the horse system and of the early electric system. If the rate of return on the valuation of the street railway property be fixed as low as six per cent., allowance should also be made for this class of expenditure of capital in the principal amount of cost of reproduction new.

In conclusion, it would appear from this general survey of the field of street railway valuation, that there are elements of value in the street railway property, whether called by the terms "intangible property," "franchises," "earning power," "good will" or "going concern," which can be measured by methods more or less exact, and which have been appraised in recent notable instances at from twenty-five per cent. to over one hundred per cent. of the value of the physical property.

## EXHIBIT No. 1

# CONEY ISLAND & BROOKLYN RAILROAD COMPANY INVENTORY OF WORK AND EXPENSE ITEMS OF REPRODUCTION NEW AS OF AUGUST 31, 1909, OF INTANGIBLE PROPERTY ACQUIRED DURING PROMOTION PERIOD

### PROMOTER'S ORGANIZATION. Preliminary

Study of situation.  
Preparation of general data.  
General investigation of laws.  
Interesting other parties.  
Meetings and correspondence.

### LEGAL DEPARTMENT.

Conferences and correspondence with promoter covering general state and local transportation laws.

### TECHNICAL DEPARTMENT.

Conferences and correspondence with promoter.  
General examination and memorandum on situation.

### PROMOTER'S SYNDICATE

Formation.  
Meetings.  
Consultations with attorneys and engineers as to general plans and procedure.  
Conferences and correspondence with engineers on report, revision of plans, supplementary reports, etc.  
Conferences and correspondence with attorneys on legal procedure, etc.  
Plans and estimates for early financing.  
Outline of financial plans.

Conferences and correspondence with promoter as to plans for syndicate, proposed agreement, etc.  
Draft of agreement and revision.  
Attendance at meetings of syndicate.  
Examination of and report on statutes, ordinances, etc., relating to street railways.  
Consultations with promoter as to plans and legal procedure.

Formal report, involving:  
Study of population, its growth, density and direction of movement, etc.  
Study of traffic; other companies, competing and non-competing, and for this situation; possibility of development, etc.  
Selection of route, with alternatives.  
Selection of power house and car barn sites.  
Estimates of cost of construction and equipment under different plans.  
Estimates of gross earnings and operating expenses under different plans for a period of years.  
Study of operating agreements with other companies.  
Maps, profiles, plans, etc.

### ARTICLES OF ASSOCIATION AND CERTIFICATE OF INCORPORATION

Consultations with attorneys.  
Consultations with engineers.  
Meetings of incorporators.  
Meetings of directors.  
Preparation of papers for filing with Secretary of State.  
Collection of subscriptions of not less than \$1,000 per mile and affidavits thereto.

Examination of statutes.  
Consultations with promoter and engineers.  
Organizing and conducting meeting of subscribers to articles of association.  
Preparation of papers for filing with Secretary of State.  
Preparation of minutes, by-laws, etc., and conducting regular meetings of directors and stockholders.  
Attendance at Albany.

Conferences and correspondence with promoter and attorneys.  
Preparation of papers for filing with Secretary of State.



**PROMOTER'S ORGANIZATION.**

**State and Local Authorities**

**PREPARATORY**

Conferences and correspondence with attorneys and engineers on form and procedure.

Planning campaign and organizing force.

**LEGAL DEPARTMENT.**

Conferences and correspondence with promoter and engineers on form and procedure.

**TECHNICAL DEPARTMENT.**

Conferences and correspondence with promoter and attorneys.

**BOARD OF ESTIMATE AND APPOINTMENT. (a) APPLICATION**

Conferences and correspondence, formal and informal with members of Board and its engineers, other than at regular hearings.

Preparation of data and reports on local companies and comparisons in other cities relative to franchises.

Revision and amendments of application.

Conference and correspondence with attorneys and engineers relative thereto.

Preparation of application. Conferences and correspondence, formal and informal, with members of Board, etc., other than at regular hearings.

Revision and amendments of application.

Conferences with promoter and engineers relative thereto.

Conferences with promoter and attorneys.

**(b) FIRST PUBLIC HEARINGS**

Publicity campaign, editing newspaper advertisements, circulars, etc.; attending meetings of property owners commercial bodies and others.

Attendance (reference to select committee).

Preparation for further hearings, additional data, etc., to meet objections.

Conferences and correspondence with attorneys and engineers relative thereto.

(The above items for each hearing.)

Securing attendance of experts for testimony.

Preparation.

Attendance.

Conferences and correspondence with promoter on results.

Preparation for further hearings.

Preparation of data and papers.

Attendance.

Conferences and correspondence with Board's engineers.

Preparation of additional data.

Conferences and correspondence with promoter and attorneys.

**(c) MEETINGS OF SELECT COMMITTEE**

Attendance.

Preparation of data.

Examination of proposed modifications and amendments to franchise, including:

Revision of estimates and plans and preparations of counter proposals, etc.

Conferences and correspondence with attorneys and engineers relative thereto.

Securing attendance of experts for testimony.

Appearance.

Preparation of data.

Examination of proposed modifications and amendments, etc.

Conferences and correspondence with promoter and engineers.

Conferences and correspondence with Corporation Counsel.

Attendance.

Revision of plans and estimates, maps, etc.

Conferences with promoter and attorneys.

**(d) FINAL HEARING**

(Same items as for first hearing.)

(Same items as for first hearing.)

(Same items as for first hearing.)

**APPROVAL OF MAYOR.**

Attendance before Mayor.

Attendance before Mayor.

Attendance before Mayor.

**CERTIFICATE OF PUBLIC SERVICE COMMISSION**

Preparation of petition and papers required.

Preparation for hearing.

Conferences and correspondence with attorneys and engineers relative thereto.

(At this hearing applicant must prove necessity, bona fides of enterprise

Preparation of petitions and papers required.

Preparation for hearings.

Conferences and correspondence with promoter and engineers.

Preparation of data and estimates.

Conferences and correspondence with promoter and attorneys.

Testimony and attendance at hearings.

**PROMOTER'S ORGANIZATION.****LEGAL DEPARTMENT.****TECHNICAL DEPARTMENT.**

and financial ability to carry out enterprise.)

Attendance at hearing.  
Attendance at subsequent hearings (adjournments).  
Preparation of further data and information.

Conferences and correspondence with commission, formal and informal.

Conferences and correspondence with attorneys and engineers relative thereto.

Appearances at hearings.

Conferences and correspondence with commission's engineers.

**APPROVAL OF CAPITALIZATION BY PUBLIC SERVICE COMMISSION**

Preparation of papers and data for hearing.

Conferences and correspondence with attorneys and engineers relative thereto.

Conferences and correspondence, formal and informal, with members of commission.

Attendance at hearing.

Examination of testimony and preparation of additional data and papers for further hearings.

Conferences and correspondence with attorneys and engineers relative thereto.

Attendance at subsequent hearings.

Preparation for hearing.

Conferences and correspondence with promoter and engineers.

Conferences and correspondence with members of Commission.

Appearance at hearing.

Examination of testimony and preparation of additional data.

Conferences and correspondence with promoter and engineers.

Attendance at subsequent hearings.

Attendance in payment of capital stock tax.

Preparation for hearing.

Conferences and correspondence with promoter and attorneys.

Conferences and correspondence with Commission and its engineers.

Attendance at hearing.

Examination of testimony and preparation of additional data.

Attendance at subsequent hearings.

**Property Owners' Consents and Options****PROPERTY OWNERS' CONSENTS**

Attending meetings of property owners.

Conferences and correspondence with attorneys.

Conferences and correspondence with chief solicitor.

Personal attention to large property owners.

General supervision of work.

Preparation and inspection of tax lists.

Conference with attorneys relative to legal proceedings to secure consents.

Preparation for and attendance at trials.

Preparation of petitions and releases.

Conferences and correspondence with promoter.

Tax lists and preparation, etc.

Attending meetings.

Preparation for legal proceedings to secure consent.

Conferences and correspondence with promoter.

Attendance at trials.

Organizing solicitors.

General maps showing owners and frontage.

Individual plans to accompany transfers.

**RIGHT-OF-WAY OPTIONS**

Conferences with engineers and attorneys on recommended private right-of-way routes.

Inspection of properties, investigation as to availability, names and location of present property owners, prices of real estate, etc.

Conferences and correspondence with attorneys and real estate brokers covering form and securing of options, etc.

Conferences and correspondence with promoter.

Form of options, etc.

Meetings with vendors' attorneys.

Conferences and correspondence with promoter, inspection of recommended properties, etc.

**REAL ESTATE OPTIONS**

Inspection of recommended car barn and powerhouse, etc., sites.

Conferences and correspondence with engineers.

(Same as for right-of-way.)

Surveys to determine availability.

Estimates of comparative economy.

**PROMOTER'S ORGANIZATION.**

**LEGAL DEPARTMENT.**

**TECHNICAL DEPARTMENT.**

Conferences and correspondence with real estate brokers.

Conferences and correspondence with attorneys on form of options.

Meeting with vendors.

(Option would probably be obtained on property not used in final design.)

**Other Rights and Consents**

**COMMISSIONER OF BRIDGES**

(The general right to operate over the East River bridges would be covered by Board of Estimate and Apportionment, but details of operation would be arranged and directed by the Commissioner of Bridges.)

Application to commissioner, with outline of proposed operation, type and weights of equipment, track and overhead construction.

Conferences and correspondence with attorneys and engineers relative thereto.

Meetings with commissioner.

Conferences and correspondence with other companies using bridges.

Examination of contracts.

**COMMISSIONER OF PARKS**

Conferences and correspondence with commissioner to obtain consent to franchise, approval of proposed type of track construction, design and location of poles, paving, grades, etc.

Conferences and correspondence with attorneys and engineers relative thereto.

**BOROUGH PRESIDENT**

Conferences and correspondence with borough president and his engineers to obtain approval of proposed type of construction, location of poles, paving, grades, etc., including submission of plans and specifications.

Conferences and correspondence with attorneys and engineers relative thereto.

**TRACKAGE AND OTHER AGREEMENTS WITH CORPORATIONS**

Meetings with officials.

Conferences and correspondence with attorneys and engineers.

Consent of Public Service Commission and Board of Estimate and Apportionment.

Estimates of costs, rentals, etc.

Preparation and examination of agreements.

**Financing**

**PROSPECTUS**

Preparation of and editing.

Conferences and correspondence with attorneys and engineers relative thereto.

Conferences and correspondence with promoter and engineers relative thereto.

Meetings with commissioner and his attorneys.

Conferences and correspondence with other companies using the bridges.

Examination and approval of contracts.

Conferences and correspondence with commissioner and his attorneys.

Conferences and correspondence with promoter and engineers.

Conferences and correspondence with borough president and his attorneys.

Conferences and correspondence with promoter and engineers.

Attendance at meetings with officials of other corporations.

Conferences and correspondence with promoter and engineers.

Consent of Public Service Commission and Board of Estimate and Apportionment.

Tentative agreements.

Final agreements.

Attendance at execution of agreements.

Conferences and correspondence with promoter and engineers.

Preparation of condensed opinion for use in prospectus.

Study of bridge operating conditions, with recommended plans for operation, estimates of earnings, maps, plans, etc.

Conferences and correspondence with promoter and attorneys.

Meetings with commissioner or his engineers.

Conferences and correspondence with other companies using bridges.

Examination and report on contracts.

Conferences and correspondence with commissioner and his engineers.

Conferences and correspondence with promoter and attorneys.

Plans and estimates.

Conferences and correspondence with borough president and his engineers regarding proposed construction, grades, paving, etc.

Conferences with promoter and engineers.

Maps, plans and estimates.

Attendance at meetings with officials of other corporations.

Conferences and correspondence with promoter and attorneys.

Opinion on form of proposed agreements.

Preparation of data for use before Public Service Commission and Board of Estimate and Apportionment.

Attendance at hearings. Estimates on equity agreements.

Conferences and correspondence with promoter and attorneys.

Preparation of letter for use in prospectus.

PROMOTER'S ORGANIZATION.	LEGAL DEPARTMENT.	TECHNICAL DEPARTMENT.
NEGOTIATIONS WITH BANKERS AND INVESTORS Detailed plans for financing. Conferences and correspondence with attorneys and engineers relative thereto.	Detailed plans for financing. Conferences and correspondence with promoter and bankers.	Conferences and correspondence with promoter and attorneys as to plans.
(a) STOCK UNDERWRITING SYNDICATE  Interesting investors. Tentative agreement. Meetings and conferences working toward final agreement. Plans for carrying out provisions of agreement, collection of subscriptions, voting trusts, interim and participation certificates, etc. Conferences and correspondence with attorneys and syndicate relative thereto.	Conferences and correspondence with promoter. Preparation of tentative agreement. Attendance at meetings between promoter and syndicate. Final agreement. Conferences and correspondence on form of certificate and preparation of form. Attendance in execution of agreement. Participation certificates, interim certificates, etc.	Attendance with promoter at meetings. Special estimates.
(b) BOND UNDERWRITING SYNDICATE  Interesting bankers. Conferences and correspondence with their engineers. Tentative agreement. Meetings and conferences working toward final agreement. Plans for carrying out provision of agreement, collection of subscriptions, voting trusts, interim and participation certificates, etc. Conferences and correspondence with attorneys and syndicate relative thereto.	Conferences and correspondence with promoter and engineers. Preparation of mortgage and trust deed. Search of titles. Preparation of tentative agreement. Attendance at meetings between promoter and syndicate. Final agreement; interim certificates, participation certificates, agreements. Attendance in execution of agreement.	Attendance with promoter at meetings. Conferences and correspondence with promoter and attorneys in regard to mortgage and trust deed. Preparation of data for use therein. Special estimates.
FORMAL ENDING OF PROMOTION PERIOD  Transfer of papers and documents. Execution of releases, assignments, etc.	Transfer of papers and documents, execution of releases, assignments, etc.	

## INVENTORY OF EXPENSES DURING PROMOTION PERIOD.

## PRELIMINARY

Assistants' time.	Typewriting.	Time and expenses of engineers, draftsmen and other assistants.
Stenographers' time.	Notary fees.	Typewriting and other expenses.
General office expenses:	Recording fees.	
Rent, light, etc.	Certified copies.	
Postage, telephone and telegrams.	Traveling expenses.	
Books—record, statistical, legal, etc.	Directors' fees.	
Files and office furniture.	Printing.	
Miscellaneous.	Miscellaneous.	
Traveling.	Fees to state.	
	Copies of consents, decrees, etc.	

## PROMOTER'S SYNDICATE

Chief assistant to promoter.	Transcripts of minutes.
Assistant as to engineering.	Tax lists.
Assistant as to accounting and statistics.	Trustees' legal expenses.
Record clerks (including bookkeeping).	Retainers in special suits.
Stenographers (including filing).	Directors' and executive committee fees.
Chief consent solicitor:	
Assistants,	

**PROMOTER'S ORGANIZATION.**

Allowance to other members of promoter's syndicate for time and expenses.  
 General office expenses:  
 Rent, light, etc.  
 Postage, telephone and telegrams.  
 Books—record (minutes, etc.; accounts, etc.).  
 Filing system.  
 Office furniture (including typewriters, adding machine, etc.).  
 Printing and stationery.  
 Miscellaneous.  
 Publicity expenses.  
 Traveling.  
 Expenses of promotion syndicate, including their attorneys and engineers.  
 Interest on money raised by promoters.  
 Premium on security bonds, employees and for franchise, etc.

**LEGAL DEPARTMENT.****FRANCHISES AND OPTIONS**

Payments to property owners for consents.  
 Lump sum payments for franchise.  
 Payments for options of real estate.  
 Commission and expenses of real estate broker in securing options.  
 Payments to title company for lists of property owners and details in connection with properties.  
 Publication required by law.

**TECHNICAL DEPARTMENT.**

**INVENTORY OF COST OF REPRODUCTION NEW, OF INTANGIBLE PROPERTY ACQUIRED  
 DURING CONSTRUCTION PERIOD. (EXCEPT TECHNICAL DEPARTMENT  
 AND CONTRACTOR.)**

**PERMANENT ORGANIZATION.****STOCKHOLDERS' MEETINGS**

Election of directors and officers; approval of stock and bond issues, agreements, by-laws, seal, etc.

**DIRECTORS' MEETINGS**

Reports of committees and officers; approval of contracts, specifications, etc.; considering and directing in matters affecting the company's plans, etc.

**EXECUTIVE COMMITTEE MEETINGS**

Practically same as above, but with greater detail and more frequent meetings.

**PRESIDENT**

Supervision and direction of all matters in connection with construction, such as:

Examination and approval of plans and specifications.

Execution of contracts.

Conferences and correspondence with city officials in securing permits and removing obstructions to company's plans.

Conferences and correspondence with officials of other companies regarding crossings and other matters of mutual interest (grade crossings, etc.).

Trips to other cities to examine types of construction, method of operation, etc.

Conferences and correspondence with financial syndicates. Unfavorable markets for securities might necessitate issuance of short-term obligations with attendant expense of Public Service Commission approval, selling, etc.)

Conferences and correspondence with attorneys and engineers on matters of construction.

**LEGAL DEPARTMENT.****GENERAL COUNSEL**

Examination and approval of contracts.

Preparation of resolutions, etc., for meetings.

Advice and direction in matter of securing permits from authorities.

Conferences and correspondence with city officials in regard to permits.

Conferences and correspondence with other companies regarding construction, etc.

Temporary injunctions and other legal procedure against interference with construction, etc., by

City officials and departments.

Other corporations, street railway, steam railway, telephone, electric, gas.

Unions on strike.

Property owners.

Hearings and orders in the above.

Defending and instituting suits for damages to property.

Conferences and correspondence relative thereto.

Suits and other legal proceedings against contractors and others for non-fulfilment of obligations to company.

Conferences and correspondence relative thereto.

Suits and other legal proceedings in matters of disputed accounts, etc.

Conferences and correspondence relative thereto.

**TECHNICAL DEPARTMENT.**

(Usual details.)

**PERMANENT ORGANIZATION.**

Securing modifications of franchises, certificate of convenience and necessity and permits, such as extensions of time, alterations of layout and design, etc., including the approval of various city officials and departments.  
 Signing securities, checks, etc.  
 Hearing and investigating complaints.

**SECRETARY-TREASURER**

All duties usual to the office of secretary-treasurer.

**AUDITOR**

All duties usual to the office of auditor.

**LEGAL DEPARTMENT.**

Preparation of certificates of expenditures for trustees, etc.  
 Personal injury suits; employees; public.  
 Preparation for and appearances in securing modifications of franchises and permits.  
 Crossing and track elevation controversies and litigation with steam railroads.

**TECHNICAL DEPARTMENT.****INVENTORY OF EXPENSES DURING CONSTRUCTION PERIOD.****GENERAL**

Fees to directors and executive committee.  
 Salaries of general officers.  
 Salaries of clerks.  
 Rent of offices, light, etc.  
 Consulting auditor developing accounting system.  
 General books and records.  
 Printing and stationery.  
 Filing system.  
 Traveling expenses.  
 Recording fees.  
 Traveling and other expenses in connection with securing appointive officers.  
 Traveling and other expenses of appointive officers.  
 Miscellaneous.

Retainers and fees to special counsel.  
 Fees to experts for testimony.  
 Court costs and witness fees.  
 Notary services.  
 Expenses of special counsel and experts, including traveling.  
 Payments for damages.

(Usual details.)

**FINANCIAL**

Engraving stock certificates including interim certificates and all expenses of delivery and storage.  
 Engraving bonds, including interim certificates and all expenses of delivery and storage.  
 Services of trustee in certification.  
 Obtaining subscriptions.  
 Registration books and records (in duplicate in company's and transfer agent's offices).  
 Issuing certificates.  
 Listing on stock exchanges.  
 Discount on securities.  
 Commissions to syndicates.  
 Cost of temporary loans.  
 Cost of short-term loans.  
 Exchange.

**CITY PERMITS AND INSPECTION**

Fees.  
 Inspectors' salaries.  
 Water charges.  
 Payments for special privileges.

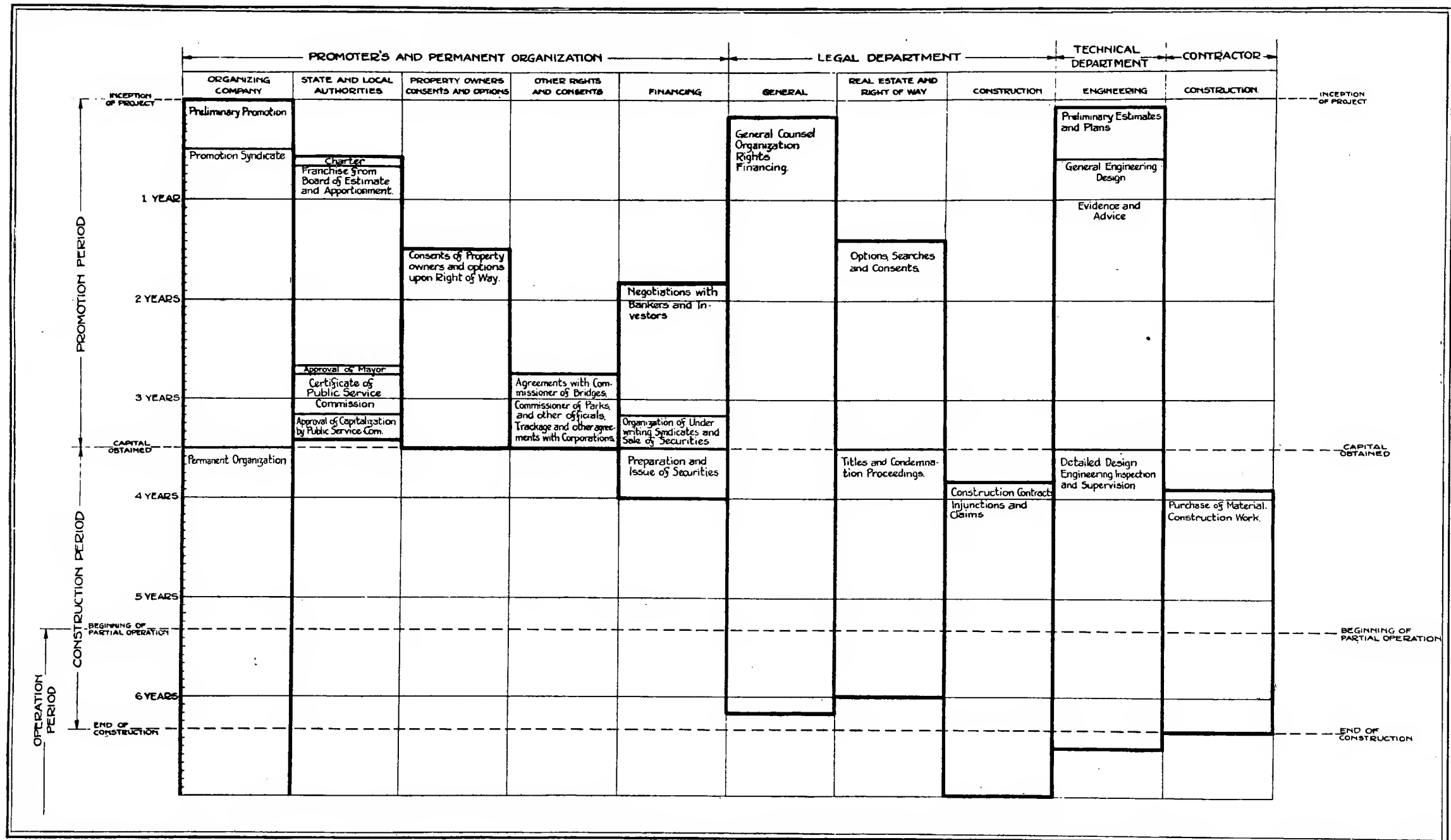


EXHIBIT 2.—CHART OF ESTIMATED TIME OF REPRODUCTION, CONEY ISLAND AND BROOKLYN RAILROAD SYSTEM.

EXHIBIT 3.—ESTIMATED COST OF REPRODUCTION NEW OF THE PROPERTY OF THE CONEY ISLAND & BROOKLYN RAILROAD  
COMPANY AS AN ADEQUATE MODERN SYSTEM AT AUGUST 31, 1909.

Evaluation of Intangible Street Railway Property

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Item	Method of Estimate	Tangible Property	Intangible Property	Total Estimate
<b>PROMOTION PERIOD. (Obtaining rights and capital).</b>				
1. Promotion expense:				
a. Promoter's organization - time and expense	Inventory priced		\$231,100	
b. Legal department - time and expense	Inventory priced		103,500	
c. Technical department - time and expense	Inventory priced		85,600	\$ 421,200
2. Property owners' contingent	Estimated		278,300	
Total, promotion period			\$699,700	\$ 699,700
<b>CONSTRUCTION PERIOD. (Expenditure of capital to completion of construction.)</b>				
3. Permanent organization - time and expenses	Inventory priced	\$ 115,640	\$ 80,000	\$ 195,640
4. Cost of land:				
a. Sites for power house, substations, car barns, shops, yards and terminals:				
Assessed value		187,800		
Additional sales value (including contract for Coney Island terminal)	Appraisal	266,300		454,100
b. Right of way on Coney Island Avenue:				
Assessed value		230,000		
Additional sales value and cost of acquiring	Add 150 per cent.	435,000		725,000
5. Cost of acquiring land (sites only)	10 per cent of 4a.	45,400		45,400
6. Cost of construction and equipment (sub-contracts) as of Feb. 1, 1909:				
a. Track (including construction on bridges and fill on Coney Island Ave. Right-of-way)	Estimate of Public Service Commission's experts			
b. Track, special work		839,325		
c. Laying and trolley construction		219,863		
d. Overhead feeders		533,159		
e. Underground conduits and cables		132,696		
f. Power plants and substations (including power house cribbing and cold intake)		100,575		
g. Building		305,750		
h. Rolling stock		733,721		
i. Incidentals		527,258		
j. Detailed estimate		1,383,461		
b. General contractor's overhead charges and profit	Detailed estimate	276,450		4,892,298
c. Interest and taxes, during construction	10 per cent of Item 6	489,230		489,230
d. Miscellaneous stock, tools and fixtures:	5 per cent of 6-7	269,076		269,076
a. Inventory	Detailed estimate	561,345		561,345
b. Incidentals	Estimate of Public Service Commission's experts	103,680		
c. Detailed estimate	5 per cent of 10a.	3,184		
11. Working capital	Estimated	\$ 250,000		\$ 250,000
Total, construction period		\$7,910,953	\$ 80,000	\$7,990,953
Total cost of reproduction new at Feb. 1, 1909		\$7,910,953	\$779,700	\$8,690,653
12. Additions and betterments from Feb. 1, 1909 to Aug. 31, 1909	Actual cost			
13. Additions and betterments necessary to produce an adequate, modern system	Detailed estimate			
Total cost of reproduction new at Aug. 31, 1909, of an adequate, modern system		\$8,520,198	\$779,700	\$9,299,898



## THE INDETERMINATE PERMIT AS A SATISFACTORY FRANCHISE

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BY WILLIAM OSGOOD MORGAN, Esq.,

Member of the New York Bar; Vice-President and Counsel, the Sheboygan  
Railway and Electric Company, Wisconsin.

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The Wisconsin legislatures of 1905, 1907 and 1909 worked out and put into effect as laws of the State, a system for the control of public service corporations which appears to be more complete and practicable than has so far been developed by any other State in this country. One feature of this legislation is the "Indeterminate Permit." The law relating to the "Indeterminate Permit," taken together with the other legislation relating to public service corporations, provides a method for dealing with those matters heretofore attempted to be covered by the municipally granted franchise contract, which, in the opinion of the writer, approaches very nearly an entirely satisfactory solution of the franchise problem.

The Committee on Public Relations of the American Street and Interurban Railway Association in its annual report at the convention held October, 1907, refers to the Wisconsin "Indeterminate Permit" as "a most important provision and one far in advance of anything heretofore attempted in any legislation in this country." "The Outlook" for May 1908, commenting upon the bill pending in the New York Legislature in relation to franchises for subways, refers to the Wisconsin law as follows:

The consistency and logicalness of the Wisconsin plan (whatever may be its practicability) is in the strongest contrast to the endless experiments, reversals and legal blind alleys which have characterized the practice in the State of New York.

In the report of the New York Public Service Commission, First District, for the year ending December 31, 1908, appears a very discriminating and carefully considered article by the Hon. Milo R. Maltbie, one of the commissioners, entitled "The Indeter-

minate Franchise for Public Utilities." Commissioner Maltbie carefully weighs the advantages and disadvantages of the short-term franchise, the perpetual franchise and the indeterminate franchise, and concludes in favor of the latter form as the most satisfactory method of dealing with the problem.

The best way to secure an intelligent understanding of the merits of the Wisconsin legislation upon this question is to take up, one at a time, the considerations necessarily involved in any franchise and ascertain whether the Wisconsin method is better or worse than other methods which have been employed.

In the first place, the subject-matter of the franchise should be clearly understood. The right conferred by a State upon a group of individuals to do business in a corporate capacity is sometimes referred to as a franchise, and correctly so, being a special privilege granted by the State. The franchise which we are now considering, however, is the special privilege enjoyed by the electric railway corporation to occupy the public streets and highways with its rails, poles, wires and other equipment, and to run cars over and upon such streets and highways and collect fares from the public.

It should also be borne in mind that the right to use the streets of a city or other municipality is not an asset owned outright by the city. The control of streets and highways is primarily in the State and not in any municipal corporation. Cities, towns, villages, etc., are municipal corporations, created by the State for the purpose of enabling it to carry out its functions of government. They are agencies of the State for particular purposes. It has been usual for the States in our country to delegate to their cities and other municipal corporations general control and regulation of those streets and highways which lie within their boundaries, and statutes are in force in most of the States authorizing municipalities to grant to street railway corporations the special privilege of using the streets for the purpose of such street railways; but without such specially delegated power from the State a municipality has no right to grant to a street railway company any special privileges in the streets. This was early laid down by the Supreme Court of the United States in the case of *People's Railroad v. Memphis Railroad*, 10 Wall., 38.

The general nature of a franchise as a special privilege derived from the State was defined by the Supreme Court of the United

States in the case of *Bank of Augusta v. Earle*, 13 Peters, 519, where the Court said: "It is essential to the character of a franchise that it should be a grant from the sovereign authority, and in this country no franchise can be held which is not derived from the law of the State." It is important to bear in mind the nature of a franchise, because street privileges have very often been regarded by cities as assets to be bargained away for a consideration, and it is this *contract* view of street railway franchises which is at the root of most of the difficulties heretofore experienced by cities when considering franchise matters. The control of the streets, then, is primarily in the State, and a franchise to use the streets is a special privilege derived from the State, usually through the agency of the municipality.

The first and fundamental difficulty with the ordinary form of street railway franchise has been that it was entered into on the theory that it was a contract between the municipality and the street railway company. In fact, it contained all the ordinary elements of a contract and has been upheld by the Supreme Court of the United States as being a real contract, the obligation of which could not be impaired. (*City Railway Company v. Citizens' Street Railway Company*, 166 U. S., 557.)

The reason why this contract theory of a franchise has worked such harm is that it has formed the politician's opportunity to make favor with the people and take money from the corporations. In the early days of street railway building, the particular provisions of the franchises were not considered of great importance either by the companies or the municipalities, because, on the one hand, the cost of constructing a horse railroad was insignificant in comparison to the cost of constructing and equipping an up-to-date, high-grade electric railway, and, on the other, because the municipalities were eager for the service.

When the original grants expired, however, and the electric railways found themselves about to occupy the position of trespassers upon the streets unless their franchises were renewed, often facing bankruptcy as an alternative to procuring a renewal of their franchises, the era of franchise bargaining begun. Here was the opportunity of the corrupt politician, and this opportunity was availed of to the utmost. The public was taught to believe that the street railways had derived enormous profits from the use of the

streets, and an entirely erroneous value was placed upon the profitability of franchises in the public mind.

Municipal ownership was agitated throughout the country, but in the end the franchises were usually extended after the political powers had been dealt with by the corporations. New contract franchises were entered into, imposing the greatest variety of obligations and conditions upon the railways. Often these obligations are utterly unenforceable, and while they perhaps serve the public as a club over the railways, on the other hand they afford an excellent argument for the railways to use against furnishing any needed additional facilities which might happen to have been left out of the contract.

Under the contract form of granting franchises, the railway companies are of necessity bound to negotiate and treat with the municipal authorities, and too often this must be done through the medium of some unscrupulous political power. There is not the slightest doubt, however, that the street railway managers, who are obliged to treat in this way for their very existence, do so with the utmost distaste, and would welcome any change in the law which would relieve them from the necessity of obtaining their essential rights in this manner. The trouble has been that the state governments have abandoned entirely to the cities the whole question of street railway franchises and regulation, and that in those municipalities where the power of the political bosses has been supreme the sole question about the franchise has been the amount of money that can be extorted from the railway company.

There are other fundamental objections to the contract theory of franchises. Many of these are economic reasons. In the first place, one of the terms about which a controversy almost invariably rages is the duration of the franchise. In many States the propaganda of limited franchises has been urged as if it were the sole remedy for existing conditions. Now, the question of the duration of an electric railway franchise is of vital importance both to the street railway and to the public. It is not of vital importance to the street railway that it should have a perpetual franchise, but it is necessary that it should have a franchise of sufficiently long duration so that, at the expiration of it, almost the entire investment shall have been refunded to the stockholders, or shall be in the form of an available sinking fund which can be refunded to them.

The scrap value of an electric railway taken up and sold, apart from its use in the conduct of the electric railway business, is but a small per cent. of its original cost, even though the property may have been maintained continuously in the highest state of efficiency. It is, therefore, obvious that if the franchise be not renewed at its expiration a tremendous loss will be sustained by the stockholders in the enterprise. This is an economic loss, by which no one profits. It does not do the public any good to have the stockholders lose their money, even if this loss could be put upon them.

This aspect of the limited term franchise is really not honestly faced either by street railway corporations or by the public in the majority of cases. It is felt that some arrangement will be made at the expiration of the franchise for its renewal, and that it really is not necessary to provide a sinking fund to pay back the capital invested at the termination of the franchise. The result of neglecting to provide such a sinking fund has been that in a great many cases corporations have been brought face to face with bankruptcy at the expiration of their franchises, and in one very notable case, that of the Cleveland Electric Railway Company, it was necessary to place the concern in the hands of a receiver for upward of a year, pending negotiations for the renewal of a franchise.

The provision of a sinking fund out of earnings necessitates the maintenance of a high rate of fare which must come out of the pockets of the railway patrons. It will ordinarily also require the limiting of operating expenses and extensions to the lowest possible point resulting in inadequate facilities for the transportation of the public. This is the price which the public pays for its insistence upon a short-term franchise.

There is ample evidence available to support these conclusions. Mr. Charles T. Yerkes, then president of the Chicago Consolidated Traction Company, stated in a public address before the American Street and Interurban Railway Association in October, 1899, that "The most important matter in regard to street railway securities is the length of the charter (meaning street franchise) under which they are operating. This question is of as much importance to the people as it is to the street railways themselves."

Mr. John I. Beggs, president of the Milwaukee Electric Railway and Light Company, at the same meeting summed up the case of the street railways most effectively as follows: "I want to know

what provision for the payment of these securities there is when our short-term franchises have expired? The franchise of our own property has a little over twenty years to run, and yet we are discussing it as they are in some other sections of the country, trying in advance to make calculations to know how much we are justified in putting into that property; how long we have in which to get a return from it. I do not know that it is being done so methodically by other companies—it may be. We have calculated, and I believe you will recognize that it is a proper charge against earnings, that you have a right to set aside this amount before the public can demand that you shall give a greater accommodation for the carrying of a passenger twelve or fifteen miles, to which Mr. Yerkes has alluded, or that the fare should be reduced. We are setting aside a certain amount for this purpose, and we want to know what is to be paid to those who may succeed us in our investment in these properties, and if, after the twenty years have expired, they will simply have turned over to them out of which to recoup the investment, a pile of junk on the streets, that the city wants removed in order that it may make a better dicker with some one else . . . I desire to throw out in connection with this paper the thought that we want to make some provision for the time that these bonds will mature. . . . I desire, gentlemen, to impress upon you the necessity, in order to make these securities safe, of having the public take them, as they do our water works and gas stocks, and in nearly all of which their charters are perpetual. The longer time our franchises have to run, the more you can afford to spend upon the betterment of your properties.”

The standpoint of capitalists in relation to limited term franchises was expressed by Mr. August Belmont, of New York City, in an address before the Brooklyn League, delivered June 6, 1908, discussing the refusal of Governor Hughes to sign the Robinson Bill passed by the New York State Legislature granting long-term franchises for subways. Mr. Belmont said:

“Private capital cannot be invested with profit in any proposition under a short-term franchise agreement. You can put out of your mind any idea of private capital interesting itself in short-term franchise propositions. You must insure at least the return of the capital invested.”

The dangers of limited term franchises have been exceedingly

well demonstrated in the case of the Cleveland street railways. The franchise of this company expired by limitation and a new franchise was granted by the Cleveland City Council on April 27, 1908. This franchise contained elaborate provisions relating to the regulation of the street railway by the city, but it was rejected by the voters in the referendum election held October 22, 1908; \$2,000,000 of bonds were coming due in the summer of 1909, and with no definite plans ahead for adjustment of the franchise question, the company, in splendid operating condition, was forced into the hands of a receiver.

Another subject very frequently attempted to be covered by the ordinary municipally granted franchise contract is the rate of fare to be charged. The trouble with providing for rates of fare in this manner is that human foresight is limited. In this age of scientific development, it is utterly impossible to lay down a fixed charge for electric railway transportation which shall continue inflexible for a long period of years, and have such a fixed rate continue to be equitable to both the public and to the railway company. It is entirely possible that such improvements in the form of the service may be brought about that the public would gladly pay the increased cost for increased facilities. On the other hand, such technical improvements may be made in the method of furnishing the service that it can be given for a very much lower price. No one can possibly foresee these contingencies for a period of twenty or thirty years, and it is folly for a municipality and a street railway company to attempt to enter into a contract definitely fixing rates for a long term of years.

It is probable that no more careful study has ever been given to the fare question than has been expended in the city of Cleveland. For years Mayor Johnson, of that city, attempted to procure a three-cent fare. The franchise which went into effect February 17, 1910, and which was in the usual contract form, attempted by a series of most elaborate provisions to regulate street railway fares during the twenty-five-year period of the franchise. A sliding scale of rates was adopted, ranging from a maximum of four cents cash, seven tickets for twenty-five cents, to a minimum of two cents cash with one cent for a transfer and one cent rebate. The fare was to be adjusted from time to time, so as to allow a fixed return on the capital invested. The company had not been operat-

ing under this franchise a week before a suburb was annexed to the city, and the question was raised whether the fares fixed by the franchise should apply in this annexed suburb, or whether the company was entitled to maintain the old five-cent rate in the suburb.

The attempt to fix rates in advance for a long period of years is based upon an erroneous conception of the proper method of dealing with electric railways. It regards these companies as speculative enterprises, attempting to make large profits through the exploitation of the people, and necessitating a bargain, or, as Mr. Beggs puts it, a "dicker" every time a franchise is granted, and, while attempting to lay down a rule for the future, in reality it regards only the present.

Let us sum up the case which has thus been made against the municipally granted franchise. We have found, in the first place, that the contract theory is in itself wrong, because it allows the municipality to treat the granting of franchises in its streets as an asset to be bargained or dickered with, disregarding the fact that the streets belong to the entire public of the whole State and not merely to the inhabitants of the city.

This dickering or bargaining away of street rights becomes part of the stock in trade of the professional politician with whom the railway company is forced to deal, in order to preserve its very existence. The most important terms of such a contract, viz., the duration of the franchise and the rates of fare, are matters which experience shows cannot be dealt with and fixed in advance by any contract, however carefully drawn.

The limited term franchise stunts the growth of our street railway systems to the great disadvantage of the public, by making capital reluctant to embark in such a precarious enterprise both as regards the construction of new lines and the financing of necessary extensions and improvements. The public lose because of the necessity of keeping up fares and keeping down operating expenses, causing a lowering in quality of service in order to provide a fund to make good the possible loss to be sustained at the expiration of the franchise, because of the failure to procure a satisfactory renewal. A final objection is the possible bankruptcy of the company and loss of legitimate investment upon the expiration of limited franchises, where the companies have not been able, or have not had



the foresight, to lay aside a fund to repay the investors on the expiration of the limited franchise.

The general recognition of the disadvantages of municipally granted franchises has led to numerous attempts to find a satisfactory solution of the problem. The State of Massachusetts has instituted a system of franchise grants which has proved, on the whole, fairly satisfactory in operation. In this State street privileges are not treated as contracts. The word used is not "franchise," but "location," and the local authorities are authorized by statute to grant "locations" in the streets for street railway purposes. These grants are subject, however, to the supervision of the Board of Railroad Commissioners, and no street location is valid until the commissioners "after public notice and a hearing shall certify that such location is consistent with the public interests." These locations are not granted for any particular period, and are revocable by the local authorities, subject, nevertheless, to the approval of the railroad commissioners. The statute provides that the municipalities in granting the locations may prescribe how the tracks shall be laid, what kind of rails, poles, wires and other appliances shall be used, and may "impose such other terms, conditions and obligations incidental to and not inconsistent with the objects of the street railway company as the public interests may in their judgment require." It has, however, been the practice in Massachusetts to make these street locations very simple, without attempting to impose elaborate restrictions and burdens. The result of this method of conferring street rights has been most admirable. A committee appointed by the Legislature of Massachusetts reported in 1900, after a most elaborate examination of franchise conditions in the United States and in Europe, that the simple street location, perpetual but revocable, theretofore in force in Massachusetts was the most satisfactory form of franchise which they had found. This committee found that the service throughout Massachusetts was highly satisfactory, and that street railway securities had reached the level of investments and were not regarded as a speculation. The report says that the limited duration franchise has been productive of "dissensions, poor service, scandals and unhealthy political action."

The State of Wisconsin has, however, taken the most advanced ground in the field of street railway legislation and regulation.

After careful study and investigation a body of law has been enacted providing a comprehensive and logical scheme of legislation for the general control of electric railways. The legislature in placing this body of law upon the statute books has broken away from the old theory that a franchise is a contract between the municipality and the company, in which the relations between the two are to be fixed once and for all by the terms of the franchise (including the duration of the franchise, the rates of fare, the compensation to be made, and the innumerable other burdens and restrictions attempted to be placed upon the railways), and has substituted the rational theory that street privileges are grants from the States, and, being conferred for a public purpose, are subject to regulation by the public, when, and as such regulation shall be required.

The statute directly providing for the Indeterminate Permit is chapter 578, Laws of 1907, which went into effect July 13, 1907. This provides, first, that every license, permit or franchise thereafter granted to any street railway company shall have the effect of an Indeterminate Permit, and that such permit shall continue in force until the municipality in which the greater part of the street railway company's property is situated shall purchase that property, and that any such municipality shall have the authority to make such a purchase, and every street railway company shall be required to sell its property to the municipality. The price to be paid for the property is to be determined by the railroad commission. Second, that any street railway company operating under an existing license, permit or franchise shall have the right to acquire, in lieu thereof, an Indeterminate Permit by filing a written declaration that it surrenders such license, permit or franchise. The acceptance of such an Indeterminate Permit shall constitute a waiver on the part of the street railway company of the right to insist upon the fulfilment of any contract theretofore entered into with the municipality relating to any rate, fare, charge or service regulated by the railroad commission. Third, that the acceptance of an Indeterminate Permit shall constitute the consent by the company to the future purchase of its property by the municipality.

The great advance made by this particular portion of the electric railway legislation of Wisconsin is that it eliminates the necessity of fixing a term, either limited or perpetual, for the duration of street privileges. The street privileges continue until the prop-

erty is taken over by the city. This provision, it will be seen, eliminates all those very serious objections, stated above, arising in connection with a limited franchise. It is not necessary for the corporation to become involved in local politics and to deal with the local boss upon the expiration of the franchise. The company is not under the necessity of attempting to raise rates and decrease operating expenses, and consequently skimp on the service, in order to provide a sinking fund sufficient to make good the enormous losses likely to be sustained by the company when its franchise expires. This great charge, which otherwise would have to be met either by the traveling public or by the investing stockholders, can be used for lowering rates and improving the service. The company does not have to face the possibility of being required to take up its tracks and sell off its expensive electric plant practically as junk at the expiration of the franchise, because the franchise does not expire until compensation is made to the company for its property. The Indeterminate Permit, therefore, eliminates the necessity of political activity on the part of the company; it eliminates the possibility of the corrupt extortion and use of money for the renewal of the expiring privileges, and it avoids the enormous economic loss necessarily sustained in rendering it impossible to use the property of the company for street railway purposes. The statute providing for the Indeterminate Permit, therefore, solves the problem of limited term franchises.

But there is more to an ordinary franchise than the question of how long it shall last. There are the questions of rates of fare, method of operation, schedules of running cars, method of construction, the providing of proper terminal facilities, the safeguarding or elimination of grade crossings, and the providing of publicity in relation to the company's affairs. All these matters the Wisconsin legislation very wisely eliminates from the field of negotiation between municipalities and street railway companies. No attempt is made to lay down fixed and inflexible rules dealing with all these matters, as has been attempted with such unfortunate results in the municipally granted franchise. All these matters are placed in the control of a Board of Railroad Commissioners, who are empowered to deal with them from time to time when and as the necessity for action arises.

This railroad commission is, in the first place, a non-political

body. It is composed of three men appointed by the governor of the State for the term of six years. One of the commissioners is to have a general knowledge of railroad law, and the other two are to have a general understanding of matters relating to railroad transportation. They must not be financially interested in railroads, and they must not serve on any committee of any political party. They are to devote their entire time and attention to their duties as railroad commissioners. They receive a salary of \$5000 per annum. They are authorized to employ a secretary at a good salary, and such clerks, stenographers, experts and temporary employes as they may require. They are also entitled to employ counsel to represent them and advise them. For the purpose of carrying out their duties they are entitled to make requisition upon any unappropriated moneys in the treasury of the State. It will be seen from the constitution of this commission and from the liberal provision made for necessary expert and clerical assistance, that it will be able to acquire information relating to street railways and experience in dealing with them which no single municipality could afford to provide for. In the new Cleveland franchises referred to above, a street railway commissioner at a salary of \$12,000 a year is provided for, but though it is stated that he is to be the representative of the city, his salary is required to be paid by the street railway company, which puts him in the unfortunate position of serving one master and drawing his pay from another.

In the next place, the railroad commission of Wisconsin is authorized, empowered and required to obtain such information in relation to the electric railways as will enable them to act intelligently upon the questions presented to them. They are authorized and empowered to deal with the question of rates. In recent times it has come to be understood that the electric railway business, in cities at any rate, and, indeed, electric transportation throughout the country, is most successfully dealt with upon the theory that such businesses are natural monopolies, and that they cannot be made to compete by any statutory requirement. It has become evident that the economic law of supply and demand applicable to competing enterprises is not satisfactorily applicable to monopolies of this sort. In some of the most modern legislation, therefore, the interests of the public in the charges to be made for the service furnished by street railways have been safe-

guarded by limiting the amount of profits which the street railways shall be entitled to make. The old method of fixing the fare in advance by the franchise contracts has given way to the modern theory of regulating rates from time to time as the necessity for such regulation arises. This theory has received very complete and careful application in the Wisconsin legislation.

In order to enable the railroad commission to determine and fix proper rates for transportation, they are required to ascertain the cost of every railroad property in the State, and to enable them to do this, they are entitled to call upon the railways for the most complete information, including statements, reports, and the personal attendance of employes and officers for examination. The commission is required to ascertain also, through its experts, the amount it would cost to replace all the physical properties of every railroad in the State. It will be seen that the commission is thus able to ascertain both the cost and the value of the railway properties. It is well known that the actual cost of any railway property is likely to be very greatly in excess of the amount it would cost to replace it. This is because street railway builders have not been able to start their work fully equipped with all the information there is on the subject of building street railways. Mistakes have been made, and necessarily made, in order to acquire knowledge of the art of railway building. It would be grossly inequitable to allow profits only on the sum which the railways might have expended if they had twenty years ago known as much about street railway building as they now know, and this is recognized by the Wisconsin legislation. The commission is then authorized to ascertain the receipts and operating expenses of all railroads, and the railroads are required to file with the commission copies of all contracts which they have entered into relating to rates of transportation.

One most important provision in respect to the regulation of rates is the power lodged in the commission to supervise the issuing of stocks and bonds of electric railway companies. The statute provides that no stock and no bonds can be issued without a certificate of the railroad commission expressly authorizing such issue, and that if stocks and bonds are issued without the consent of the commission, such stocks and bonds are void. This will prevent sanguine promoters from capitalizing hoped-for future earnings

and enriching themselves by passing off securities of doubtful value upon the public. It will also prevent the distress so often created by the collapse of such inflated securities. The railroad commission, having the supervision of the issue of stocks and bonds, and also having the fixing of rates, will feel, and the writer has been personally assured by the Wisconsin commissioners, do feel that such rates ought to be allowed as will give a reasonable return on any stock and bonds which they have authorized to be issued.

With this data in hand, the commission is in a position to fix an equitable and just rate, which will provide a reasonable return upon the capital legitimately invested in the enterprise (even although some of it may have been unwisely invested), and, on the other hand, a rate which will provide as cheap and adequate service to the public as can be given under the circumstances.

In the matter of fixing rates, the commission may act upon the complaint of any person, or it may act on its own initiative. The spirit of the Wisconsin law is very aptly illustrated by the provision that the action of the commission in fixing or changing rates may be invoked also *by the railway companies themselves*. That feature of the franchise contract, therefore, which attempts to fix in advance for a long period of years the rates to be charged for the service is entirely eliminated by the Wisconsin legislation, for the rates being within the control of the commission cannot, of course, be fixed by municipalities in granting franchises. The Railroad Commission may also regulate the issue of street railway transfers, a matter frequently attempted to be regulated by municipalities.

The commission is also authorized and required, upon the complaint of any party, to examine any electric railway crossing, whether it be a crossing at grade, or otherwise, with a public street or highway, or a crossing with another electric railway or steam railway, and the commission is authorized to prescribe such changes as it deems necessary to be made in these crossings, and to determine who shall pay for the cost of the changes. All fatal accidents are required to be promptly reported by the companies to the commission, and the commission is required to make prompt investigation of such accidents.

All electric railway construction outside of cities is under the direct supervision of the commission. In the first place, no such

railway can be constructed without a finding on the part of the commission that the building of such railway is a matter of public necessity and convenience. All plans for the construction of the road must then be filed with the commission, and any changes in these plans required by the commission must be made. The road must then be constructed in accordance with these plans, and before operation is commenced the commission are to examine the completed road, and, if they approve, are to grant a permit to operate.

All railroads are required to furnish reasonable and adequate service and facilities. They are required to publish their rates of fare, and no change in the fare is allowed except after notice to the commissioners and notice to the public. Proposed changes in fare can be stayed by the commission until it has had an opportunity to investigate the justice of such changes. Free transportation to state officers is forbidden. All discrimination in the matter of rates or service furnished to different patrons is absolutely prohibited under severe penalties.

The requirements of the Wisconsin legislation upon electric railways, and the provisions of that legislation as to the authorities and duties of the railroad commissioners, and particularly as to the personnel of the railroad commission and the force of assistants which they are entitled to employ, deal in a most comprehensive and logical manner with all those relations between the public and the electric railway companies which separate municipalities have so long and so unsuccessfully attempted to deal with through the municipally granted franchise contract.

The Wisconsin legislation does not in terms provide that no conditions or burdens may be placed by municipalities on the grant of street privileges. This the writer believes is an important step which should yet be taken to complete the scheme of legislation. It would be well enough to permit municipalities to impose certain conditions which arise in connection with the particular circumstances and which are not of vital importance to the railways, but all such restrictions and burdens should be limited by a provision that they shall relate, in a reasonable manner, to the operation of the railways, and should be further subject to the approval of the railroad commission. But the great advantage of the Wisconsin legislation is that practically it does eliminate from municipal interference those matters which vitally concern the operation of

electric railroads, viz., the granting of limited term franchises, and the imposing of fixed and unalterable rates of fare over a long period of years. This Wisconsin plan, therefore, while it does not directly and in terms abolish the municipally granted franchise contract, does, nevertheless, practically do away with it by lodging in the railroad commission those regulatory provisions which have been attempted to be provided heretofore in franchise contracts. As these provisions are eliminated, the franchise becomes what, in theory, it ought always to have been, a grant by the public of rights in the streets, and not a matter of bargain and dicker between municipalities and the transportation companies.

It should also be observed that the Wisconsin theory of franchises, and of dealing with electric railway rates, practically eliminates the question of compensation for franchises. So long as the rates of transportation and the quality of the service to be furnished are within the jurisdiction of the railroad commissioners, and can be fixed and changed at any time by them when such change is reasonably required, and in view of the law of the land as laid down by the Supreme Court of the United States that legitimately invested capital is entitled to a reasonable return, it can be of no advantage to a municipality to exact a payment for a franchise. This payment at once becomes a part of the legitimately invested capital, and the corporation is entitled to charge a rate which will yield a return on this item of investment, and also a rate which will in time refund it to the investor. This added item of charge the company is entitled to receive from the traveling public in rates for transportation. The result is that any moneys which the municipality may receive in return for the franchise to use the streets, are contributed indirectly by the patrons of the electric railways, and this situation is further reducible to the proposition that electric railway patrons are being taxed for the benefit of the general public. There is no escape from this conclusion, and when it is thoroughly appreciated the clamor for a cash compensation for the grant of street privileges is likely to subside.

The Wisconsin legislation does not merely state the ideas of the legislators as to what ought to be done, as legislation frequently does, but provides most completely for the carrying out of the entire plan. Severe penalties are provided for the neglect of any



railroad company to comply with any provision of the law, or with any order of the railroad commissioners. The Attorney-General and the several district attorneys throughout the State are required to prosecute for any violation of the law, or violation of any order of the railroad commissioners, when requested to do so by the commission. The whole spirit of the legislation, however, is far from arbitrary, and any company aggrieved by any order of the commission may appeal to the courts. Such orders of the commission cannot, however, be indefinitely tied up in the courts, because such appeals are given precedence over all other civil cases.

The Wisconsin Indeterminate Permit, taken in connection with the remainder of the legislation adopted by the legislatures of 1905, 1907 and 1909 for the regulation of electric railway corporations, in the opinion of the writer, provides an exceedingly satisfactory form of franchise. This result is accomplished not by the discovery in Wisconsin of some unique form of franchise, but by the application of correct economic principles to the business of electric railway transportation, by practically doing away with the granting of franchises through contracts and bargainings with municipalities, and the political corruption and short-sighted policies which have so frequently characterized such municipal contracts. While this legislation might be improved by specifically prohibiting municipalities from imposing terms on the granting of franchises, except with the approval of the railroad commissioners, it is not improbable that such will be the practical result of the legislation as it now stands.

It should be noted here that the Indeterminate Permit in relation to street railroads does not provide for freedom from competition, as does the Indeterminate Permit in relation to other public utilities in Wisconsin. The public utilities law of 1907 dealing with gas companies, electric companies, water companies, etc., provides that where there is in operation in any municipality such a company holding an Indeterminate Permit, no franchise can be granted to a competitor, nor can the city go into the business without obtaining from the railroad commissioners a certificate that such competition or municipal operation is necessary for the public good. The provisions relating to the Indeterminate Permit for street railways are substantially identical with those relating to the other public utilities, except that freedom from competition is not

granted in the case of street railways. It is not improbable that the nature of the street railway as a monopoly will be directly recognized in future legislation, either by amending the law relating to the Indeterminate Permit for street railways so as to make it conform to that relating to other public utilities, or by requiring the approval of the railroad commissioners for all street railway franchises.

## STATE SUPERVISION OF ELECTRIC RAILWAYS IN WISCONSIN

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BY HON. B. H. MEYER,

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Commission of Wisconsin.

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The mileage of electric railways in Wisconsin is comparatively limited. There are about five hundred and ninety-two miles of line and seven hundred and ninety miles of track, of which somewhat less than one-half is located within the limits of municipalities. Construction has been authorized for approximately two hundred and fifty miles more, and several more or less extensive projects are in various stages of development.<sup>1</sup>

Section 2, Chapter 362, of the laws of 1905, being the original Railroad Commission Act under which the present Commission is functioning, provides that the term "railroad" shall include "all corporations and their lessees that now or may hereafter own, operate, manage or control any railroad or part of a railroad as a common carrier in this state, or cars or other equipment used thereon." Subdivision A of said section extends the provisions of the act to the transportation of passengers and property between points within the state, and also to all railroad corporations that ". . . do business as common carriers upon or over any line of railroad within this state, and to any common carrier engaged in the transportation of passengers and property wholly by rail or partly by rail and partly by water."

Subdivision B of the same section provides that the act ". . . shall not apply to street or electric railroads engaged solely in the transportation of passengers within the limits of cities."

Soon after the enactment of this law the attorney for the Milwaukee Electric Railway and Light Company, the largest electric railway system in the state, inquired of the Commission whether or not a street railway company which transacted business as a common carrier partly within and partly without the limits of a

<sup>1</sup>For detailed statistics of the results of operation of electric railways in Wisconsin, see third annual report of the Railroad Commission of Wisconsin, part 3, pages 600 to 674.

municipality is subject to the provisions of Chapter 362 with respect to both urban and suburban business. Specifically, the question was whether the Milwaukee Electric Railway and Light Company was required to report accidents occurring on its lines within the city limits, it being apparently conceded that the statute required it to report accidents occurring outside the city limits.

The Commission concluded that any street railway company that is not solely engaged in the transportation of passengers within the limits of a city is subject to Chapter 362 of the laws of 1905, both as to its urban and suburban and interurban business, and that the reports of accidents should include both classes of business. The peculiar language of the law, the circumstances under which the statute was enacted, the probable intent of the legislature, and court decisions throwing light upon the construction of the statute, are discussed in the decision of the Commission officially disposing of the inquiry with the aforesaid conclusions.<sup>2</sup>

The law of 1905, as construed by the Commission, therefore gave the Commission the same jurisdiction over electric railways that it conferred with respect to steam railways. However, since there was some doubt regarding the extent of jurisdiction conferred, the legislature of 1907 amended the original law by making the act apply also to "all street and interurban railway companies." This amendment left no doubt regarding the complete jurisdiction of the Commission. It has never been questioned since.

In addition to the basic railway statute as amended, there are special acts applicable to electric railways relating to the heating of cars, waiting rooms, fenders, power brakes, the issue of securities, authority to construct, etc. These acts are supplemental to the general railroad law and together with the latter comprise a regulatory code which is as broad as the business. I assume that it is not intended that I should discuss the general principles of the railway legislation of Wisconsin in this place, but confine myself to certain aspects of the law as it has been applied to electric railways. While the mileage of electric railways in Wisconsin is relatively small, the legislation applicable to it is comprehensive enough, it seems, for a mileage as extensive as any that can be created within the boundaries of a state. The legislative and administrative problems are the same as they would be if the mileage in the state were the most extensive of any in the Union.

<sup>21</sup> W. R. C. R., 178 to 191.

The first of the more important cases relating to electric railways was brought before the Commission during the fall of 1906, and embraced practically all the phases of the service within the city of Milwaukee and certain suburbs. A separate complaint related to the alleged discrimination in the arrangement of fare zones between Milwaukee and one of its suburbs. While the absolute reasonableness of the rate was challenged in each case, by stipulation the latter question was held in abeyance pending a valuation of the property of the respondent's lines and the necessary statistical investigation by the Commission. While the service cases were decided within the following year, the rate cases are still pending. The valuation has been completed, analyses made, and unusually voluminous proceedings terminated. The attorneys are at present engaged, we are advised, in the preparation of their respective briefs, and the matter will naturally come up again before the Commission for argument as soon as these preparations have been completed.

The service cases related to overcrowding, lack of cleanliness in the cars, improper routing of cars, failure to sell certain classes of tickets on cars, failure to install power brakes and properly guard certain crossings, and similar matters. All of these questions are disposed of in the decisions which the reader may find in 1 W. R. C. R. 662 to 688, and 1 W. R. C. R. 689 to 711.

Although many of the matters referred to in these first complaints had apparently been met by the Commission, complaint regarding certain minor matters relating to the service continued to come to the Commission with such persistence that it was decided to institute a comprehensive and thorough investigation of the service situation in Milwaukee by the Commission on its own motion.

The field work of this investigation was begun in October, 1908, and from this date to March, 1909, from two to five men were kept constantly in the field making observations upon service conditions. A final report covering the investigation was made in June, 1909. This report was directed to three chief phases of the problem, viz., (1) the extent of service given by the company, (2) the service required by the traveling public, (3) the necessary re-routings of the various lines in order to avoid present conditions

of congestion in the down-town district and to obtain better accommodations for certain classes of traffic.

Upon completion of the work in June, 1909, the following suggestions were made to the company for the improvement of the service:

(1) The adoption of re-routing schemes which were submitted in detail in the report.

(2) Providing a sufficient number of cars to take care of the traffic on the various lines which were overcrowded at periods shown in the report.

(3) Establishing definite stopping places at street intersections suitable for all conditions of travel.

(4) Making service stops on both sides of important transfer points.

(5) Soliciting the co-operation of the public through the medium of proper signs posted in the car.

(6) Exacting greater courtesy on the part of trainmen.

(7) Endeavoring to train the public to move on and off cars in a more systematic manner.

(8) Better supervision of cars at the various street railway intersections.

(9) Requiring the trainmen to be more alert in saving time at intersections and to act more promptly upon the supervisor's orders.

(10) Insisting that trainmen do not shirk by running their car so that the one ahead or the one behind will receive the passengers.

(11) Using more care in maintaining proper headway or spacing between cars.

It was also suggested that the public could co-operate with the company in improving the service as follows:

(1) By readily complying with the requests of conductors; for example, stepping forward promptly when requested, etc.

(2) By not unnecessarily crowding the vestibules and aisles of the cars.

(3) By exercising more promptness in leaving and boarding cars.

(4) By general co-operation in other details.

Proposals for the future were also made which involved new track upon various streets. The re-routing scheme also involved considerable new track as well as changes in the routing of some of the car lines in the down-town district.

The final report consisted of approximately fifty pages, and there were submitted in supplementary detail, about three hundred pages of field data, diagrams, schemes for re-routing, car demand curves, investigations as made in other cities, studies of transfer data, movement of passengers, etc.

After a few observations had been taken, it was noted that the times of greatest travel were 6.00 to 9.00 a. m., 11.00 a. m. to 2.00 p. m., 5.00 to 8.00 p. m., and from 10.00 to 11.00 p. m. These intervals were designated periods one, two, three and four. The observations were then confined mainly to the above periods of traffic, it being assumed that any scheme which would handle the periods of maximum travel would prove entirely adequate at any other period of the day. It was soon found that the travel during period four was not of such extent but that it could be easily handled by the routing system then in use, or any other which might be put in force. It was therefore omitted from the further investigations.

The fourteen main lines of the street railway system were then investigated in detail under each of the remaining periods. Inspectors collected data as to the number of passengers riding, the number of cars, the time of arrival of cars, and such similar information as would be of value in dealing with the traffic conditions. For a number of days traffic on one line would be observed in order to find the average number of people riding upon the line, the amount of overcrowding, if any, the destination of the passengers, and other matters of similar nature which would make the inspectors entirely familiar with the conditions.

From a total of nine thousand cars observed, it was noted that quite a number of the people riding preferred to stand even when seats were available, and this tendency seemed to follow a fixed law. In fact, observations showed that in 1,499 cars an average of two people stood by preference when only ten to fourteen people were on the car. In 1,483 cars observed, three people stood when there were only fifteen to nineteen passengers. In 1,411 cars observed, four people stood out of twenty to twenty-four riding.

Five were observed to stand in 1,137 cases where there were from twenty-five to twenty-nine people on the car. Six stood in 867 cases when the car contained thirty to thirty-four people. An average of seven remained standing in 703 cars observed which contained from thirty to thirty-nine people, and finally, in 392 cases, in which there were from forty to forty-two passengers on the car, eight of these stood by preference. Therefore, for a car having a seating capacity of forty-two people (the size of the street car in general use in Milwaukee), a "comfortable load" was taken as fifty passengers, on the assumption that if eight people preferred to stand, even if seats were provided for them, it was therefore unnecessary to provide seats for these eight people. A car which afforded seats for forty-two people could then be called upon to carry a load of fifty people "comfortably" under these conditions.

A number of reasons might be suggested as explaining this preference of a number of passengers to stand rather than to sit down in available seats. The passengers may wish to stand on the rear platform and smoke, they may prefer to stand on the front platform for observation, or they may have been sitting down all day and prefer to stand for that reason, or having only a short distance to ride, they may not care to go to even the slight trouble of searching for one of a number of available seats. In fact, there is a wide variety of reasons why a number of the passengers should prefer to stand rather than to avail themselves of seats, and this tendency, as shown above, seems to obey a general law.

Having determined a "comfortable load unit" for the car, the next question to determine was the number of cars required for the service. This was solved by observing the number of people riding during the maximum periods of travel upon each of the fourteen lines above mentioned. The average number of people on the cars for these periods was plotted, and where these averages exceed fifty people, it denoted that the cars were more than "comfortably" filled. From these determinations, the extent and duration of the overcrowding readily became known, and the number of extra cars needed was readily determined.

It was discovered that a considerable amount of overcrowding was due to the distorted headway or time-spacing between cars. If the line were operated upon a five-minute headway, the cars were each supposed to be spaced that time interval apart, or, in



other words, if one car passed a certain point on this line five minutes were supposed to elapse before another car would pass the same point. This headway was often considerably distorted, owing to the fact that various running speeds were observed; people in boarding or leaving would detain a car longer than was necessary; a drawbridge might be open, or the motorman himself might be careless in controlling the speed of his car so as to maintain a proper headway. The result of this was that two cars might follow each other just a square or so apart, while from eight to ten minutes might elapse before another car came along. The first and third cars, in this event, might become considerably overloaded.

After each line had been studied in considerable detail in the effort to ascertain just what the requirements of the traffic were regarding the proper number and headway of cars, the matter of the destination of passengers was then considered. The entire territory embraced by the various lines was divided into different districts. A study was then made of the character of the traffic, the districts served, etc. In an effort to ascertain the destination of the average passenger to further aid in this consideration, a complete set of transfers for the entire day was obtained, and by going over these in connection with the "car demand curves," the origin and the destination of the average passenger on each line were determined. This was necessary in order to ascertain the re-routing required to thus serve the demands of the public. As an example of some of the data which resulted from these latter observations, it was found that a very considerable percentage of the morning and evening traffic in the western and northwestern part of the city of Milwaukee had a final destination in the southwestern part of the city, or the other side of the Menomonee valley. It was necessary for these passengers to travel through the down-town congested district, across the Menomonee valley at West Water Street, and then proceed westward out along the National Avenue or some similar line. This necessitated a couple of miles of unnecessary travel with the consequent loss of time, which could have been saved if the traffic were routed across the valley direct at some more western point.

A large number of the car lines considered passed the important intersection at Third Street and Grand Avenue. This point

is the most congested part of the city, and with the teaming, pedestrian traffic, likelihood of drawbridges being open, etc., it forms a point where cars were very likely to be delayed a considerable period. To avoid this difficulty, it was proposed to re-route several of the lines in the down-town district so as to make it unnecessary to cross this intersection, but yet bring the cars to within a short distance of this point and thereby relieve the congestion.

Another point covered in the investigation was the movement of passengers in alighting from and boarding cars. It was noted that passengers in Milwaukee were slow in alighting from and boarding cars as compared with the average passenger in other cities. Observations were made in St. Louis, St. Paul, Minneapolis, Duluth, and Indianapolis. It was determined that during the evening peak in the down-town districts of Milwaukee, it required on the average one and a half seconds per passenger to board a car when ten passengers were getting on. This contrasted with 1.37 seconds in Duluth and St. Louis, where pay-as-you-enter cars are used, 1.25 seconds in Minneapolis, 1.20 seconds in St. Louis and St. Paul, and 1.02 seconds in Indianapolis. When five people boarded a car, the average in Milwaukee was also longer than in any other city. At Indianapolis five people would board a car in an average of 1.25 seconds per passenger, while at Milwaukee 2.12 seconds were required. And even when fifteen passengers were boarding a car, there was considerable difference in the time required by the average passenger between Milwaukee and other cities investigated. As a matter of fact, the best time made at Milwaukee was approximately 1.20 seconds per passenger, no matter how large the crowd, while the other cities attained an average of approximately .8 seconds per passenger when from fifteen to twenty people or more boarded the car.

At the first glance it would appear that this slowness was due entirely to the passengers themselves, but upon investigation it was ascertained that the company was partly to blame, due to its having no definite established stopping places for its cars. For instance, a car might stop exactly on the other side of the crossing, while the car following might stop a car length or so past this point. The people would generally congregate at a certain place, expecting to board the car there, and when the car proceeded thirty or forty feet past this point, it was necessary for them to walk

or run to it. This caused a delay, and thus required considerably more time in boarding the cars than would otherwise be the case.<sup>3</sup>

While this is a very brief statement of the Milwaukee investigation, it will probably serve to illustrate the manner in which the Wisconsin Commission endeavors to administer regulatory statutes relating to electric railways.

A large number of formal and informal complaints relating to electric railway systems in all parts of the state have been filed with the Commission from time to time, and decided in due course. These complaints involve all phases of rates and service, and scarcely deserve enumeration in detail.

In the case of one complaint alleging the abandonment of a branch line of a street railway system within the municipal limits, it was shown that the enterprise of the respondent had been a losing proposition from its inception, and that especially on the branch line in controversy operating expenses exceeded the revenue. The Commission took the position that if a railway system does not earn sufficient revenue to cover the cost of operation and maintenance because one or more branches of the system cannot be operated except at a loss which more than counterbalances the profits of the rest of the system, the interests of the public may be best subserved by the abandonment of such branch or branches. The Commission concluded that the respondent in this case was unable to assume any greater financial burden than it was then carrying, and that this and other facts in the case forbade any action on the part of the Commission looking toward a restoration of service on the abandoned branch. (4 W. R. C. R. 757-765.)

A complaint emanating from another city alleged that an ordinance allowing the respondent to abandon and take up its tracks on a certain street and providing for an extension to take the place of such abandoned track, is unreasonable, in so far as it allows the respondent to abandon and take up said track. This track was taken up prior to the filing of the petition. The Commission held that it had no authority to authorize the construction or extension of any electric railroad within a city, or prevent the abandonment or change of location of any part of such a railroad instituted under a franchise granted by the common council, after the consent of the council had been obtained. (3 W. R. C. R. 292.)

<sup>3</sup>Third Annual Report. R. R. Com. Wis., pp. 117 to 127.

In a recent decision declaring the construction of a certain electric railway to be a matter of public convenience and necessity, the Commission gave notice that it would not authorize the construction of fragments of a larger system for the purpose of crippling existing enterprises or exploiting the most profitable parts of a route, but that only the whole of such systems could receive the sanction of the Commission. (*In re* application of M. & F. R. V. Ry. Co. for certificate of convenience and necessity.)

The purpose of these paragraphs has been to describe, without detail, the state supervision of electric railways in Wisconsin. The methods followed in this state, and the results accomplished, may be of aid to other states.

## THE FRUITS OF PUBLIC REGULATION IN NEW YORK

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In his first message to the legislature, transmitted in 1907, Governor Hughes called attention to the fact that adequate control of public service corporations did not exist in the State of New York. He recommended that certain boards then in existence be abolished and that a new commission be created with enlarged powers, so that the interests of the public might be properly safeguarded. This recommendation was so widely and heartily endorsed throughout the state that the legislature passed a law to make effective the recommendations of Governor Hughes, with only six dissenting votes. Under this act, upon July 1, 1907, two public service commissions, each of five members, came into existence, one having jurisdiction in Greater New York, the other in the remainder of the state. The former, with which this article deals, succeeded to the functions within its area of the Railroad Commission, the Commission of Gas and Electricity, the Inspector of Gas Meters and the Rapid Transit Commission. In addition, many new powers were conferred which greatly extended the scope of public regulation. It has been asserted that no state board has greater powers or functions. A brief résumé will suffice to show the extensive authority enjoyed by these commissions:

### *Powers and Duties*

1. To examine into the general condition, capitalization, franchises and management of public service corporations; to compel the production of all records, documents and papers, and to summon witnesses.

2. To establish a uniform system of accounts and records and prescribe the form of annual, quarterly and monthly reports.

3. To order repairs or changes in corporate property, the

use of additional facilities, or the adoption of improved methods of operation, in order to secure safe and adequate service.

4. To test gas and electric meters, approve types of meters, and establish standards of quality for gas and electric service.

5. To fix just and reasonable rates to be charged by public service corporations, to prevent unjust discrimination, and to require two or more carriers to establish through routes and fix joint rates for through service.

6. To entertain complaints and after due hearing make such order as will remove the cause of complaint.

7. To grant or withhold the certificate needed by a public service corporation before it can begin new construction or exercise a franchise or right not already exercised.

8. To approve or disapprove the transfer of a franchise, or the making of a contract relating to a franchise.

9. To give or withhold permission for the issuing of corporate securities, or for the merger of existing companies; but not to permit the capitalization of any merger or franchise itself.

10. To grant or refuse permission for the transfer of stock in a public service corporation to a similar corporation, or for the acquisition of more than ten per cent of such stock by any corporation.

11. To grant, subject to the approval of the Board of Estimate and Apportionment, franchises for rapid transit railroads, whether subways, tunnels, elevated roads or continuations of trunk lines, such as the recent Pennsylvania Railroad extensions.

12. Subject to the approval of the same board, to lay out municipal rapid transit routes, prepare plans, obtain contractors, supervise construction, and secure operators for such routes, or under certain conditions to operate them directly.

All freight and passenger tariffs, including joint tariffs and the names of participating carriers, and all contracts or arrangements relating to transportation, must be filed with the Commission. The Commission has also required the rate schedules of all gas and electric companies to be filed.

#### *Utilities Controlled*

The jurisdiction of the Commission for the First District—that is over Greater New York—extends to all railroads and street

railroads lying wholly within the city, to such portion of railroads extending from one district to the other as lies within the First District, to all street railroads any portion of whose lines are within the city, to all common carriers so far as concerns operations exclusively within the city, to all gas and electric plants and to all the corporations or persons owning, leasing, operating or controlling these agencies.

The public utilities in Greater New York are gigantic. They serve not merely the 4,767,000 persons who live in the metropolis, but the many thousands from New Jersey, Connecticut and the North who come to the city daily. The gas companies supply more than one-fifth of the entire volume of gas produced in the United States, and the electric companies produce about one-thirteenth of the electricity produced in the United States for light and power. The transportation lines carry upwards of twice as many passengers as the steam railroads of the whole United States. One-third of this enormous traffic is carried during two hours in the morning and two hours in the evening, resulting in congestion and crowding which beggars description. Upon the average, each day of 1909-10 saw 340,000 passengers apply for transportation over and above the number carried upon the corresponding day the preceding year.

One would naturally infer that such a field would be the richest in the world. It is somewhat staggering to learn, therefore, that practically all of the surface lines in the very heart of this fertile field have been in the hands of receivers for about three years. When the Commission took office, all the lines in the boroughs of Manhattan and the Bronx were being operated by one company, the New York City Railway Company. The system was in a woeful state of disrepair, the result, in part at least, of decades of "high finance." Leases, bond and stock issues, and dividend guaranties had been piled on each other in a bewildering fashion. Dummy companies had been saddled with the responsibility of operating great systems. Funds which should have been used for maintenance were used to pay exorbitant rentals and dividends on fictitious capitalization. The system was tottering to inevitable bankruptcy, for it could no more continue than a pyramid can stand upon its apex. The real facts were

at first not generally known, but after the Commission turned on the light, the entire system went into the hands of receivers.

There are those who blame the Commission for this collapse and the subsequent decrease in stock exchange prices. But the Commission was no more responsible for the conditions it found than the doctor who examines a patient, reports the existence of a virulent disease and proceeds to prevent the repetition of an epidemic. The investigation paved the way for the rehabilitation of the system, which has been begun but not yet completed.

### *Improvement of Equipment*

Among the first orders adopted by the Commission was one requiring the companies in Manhattan and the Bronx to overhaul and repair all of their cars, and to make them clean, safe and efficient. The Commission has found that in Manhattan about twenty per cent of the cars were run into the barn for minor defects every day. Of the cars inspected one-fourth had flat wheels, one-half needed painting in whole or in part; one-half "rattled;" two-thirds had "gear noises;" one out of every six was operated without headlights, and one in every sixteen was "filthy." In many cases the companies had neglected so small an expenditure for public convenience as suitable signs showing the routes over which cars were operated and their destination. In compliance with the Commission's order, the rolling stock was put in first-class operating condition, resulting in greater comfort to the public, fewer breakdowns and greater economy in operation.

The conditions were not so bad in other boroughs, but from time to time other companies have been required by order or informal request to overhaul their cars, to improve the ventilation of certain types of cars, to maintain the proper temperature in cars, to install guard rails to prevent passengers entering or alighting on the wrong side, to put vestibules on cars for the protection of employees, to maintain shelters for waiting passengers at connecting points, to lay new or heavier rails, to lubricate curves and remove corrugations from the surface of rails in order to prevent noise and vibration, to double track certain of their lines, to lay or repair pavements between tracks, and to remove snow and ice from tracks and adjacent pavements.



*Safety Devices*

The investigation of the Commission developed the fact that practically all of the surface lines were being operated without adequate devices for saving life. During the year 1906-07, the companies incurred expenditures for injuries, damages and legal expenses amounting to over \$3,500,000 and killed scores of persons. Yet it was found that the cost of equipping all the lines with suitable wheel-guards and fenders would not exceed \$300,000. Believing that nothing is more important than the saving of human life, the Commission made extensive and scientific tests of life-saving devices under conditions closely resembling the various street conditions obtaining in New York. Ninety-two different devices were submitted and 1,801 separate tests were made, which showed that there were several types of wheel-guards and fenders far superior to most of the contrivances then in use in New York, and less expensive to maintain. Representatives from many cities in the United States, Canada and Europe attended.

Upon the completion of these tests, the various street car companies were heard. Many of them opposed the introduction of new and improved devices, but after thorough consideration all companies were ordered to equip their cars anew, and the work has just been completed for the entire city. Of course full results have not yet become apparent, for the cars of several large companies have only recently been equipped, but from the moment of introduction, the new devices reduced the number of fatal and serious accidents and decreased the amount paid for injuries, damages and claims. The annual number of persons killed on the surface lines in New York was reduced from 248 in 1908 to 161 in 1909, and the number during the first six months of 1910 has been 74, a reduction of 35 per cent last year and a further reduction of 8 per cent for the first half of this year. Many cases have been reported of persons picked up by these improved fenders and wheel-guards with little or no injury, under circumstances which would have meant certain death or serious injury under the old system of operation. One of the companies, the Union Railway Company, in violation of the orders of the Commission, operated a few cars without a proper wheel-guard and killed a man. His life doubtless would have been saved if the orders had been obeyed, yet

the judge dismissed the suit brought against the company on behalf of the people of the state on technical grounds.

All accidents occurring on any transportation line in Greater New York must be reported to the Commission. Immediate notice must be given by telephone to the office of the Commission, which is open between the hours of 8 a. m. and 11 p. m. to receive notices and complaints of any nature. The Commission investigates the causes of accidents and issues orders to prevent their recurrence.

Steam railroads have been required, whenever two or more employees are working on the tracks to station a man to warn them of the approach of trains; and through the Commission's recommendation there has been increased activity by railway and city officials in keeping trespassers off railroad tracks. An investigation and a suggestion to the operating company have caused a large amount of inflammable material to be removed from the subway. A system of locomotive boiler inspection is maintained, extending to all locomotives over which the Commission has jurisdiction. The plans and specifications of new cars are examined. An investigation of brakes on the elevated cars of the Brooklyn Rapid Transit Company resulted in the voluntary equipment by the company of all of its cars with an improved type of air brake. The Long Island Railroad Company has been ordered to equip its local trains with platform trapdoors and gates, or vestibule doors, and to keep them closed between stations. In addition, this company has been ordered to man its electric trains so as to have an employee at each car opening during station stops, and to raise certain station platforms to the level of car platforms.

Particular attention has been given to the dangers of grade crossings. In scores of cases the Commission has required more adequate planking of crossings, the installing of gates, maintaining of flagmen, erection of warning signs, operation of signal bells, placing of additional lights, or the building of overhead foot bridges. The New York Central has been required to station more flagmen at its dangerous Eleventh Avenue crossings and cease the operation of trains during certain hours. An investigation is now being made of about two hundred grade crossings in Brooklyn, Queens and Richmond.

*Improvements in Surface Transportation*

The transportation problem is more acute in New York than in any other city in the world. More passengers are carried per 100,000 of population and during a shorter period of time. As already indicated, there are two directions in which the Commission may improve conditions: (a) by requiring the existing companies to improve their service, and (b) by the construction of rapid transit lines either with city money or by private companies under the direction of the Commission. Both methods have been effectively utilized, and many orders have been issued directing various improvements. At certain hours in the day, it is physically impossible to operate a sufficient number of cars to give every one a seat, or even to prevent indecent crowding. But the general standard set by the Commission has been that during rush hours all lines shall be operated to their maximum capacity, and that at other times a sufficient number of cars shall be run to provide seats equal to the number of passengers in every interval of fifteen, twenty or thirty minutes, as observed at a point at or near the center of maximum loading. In certain cases a stricter rule has been enforced. Thus on certain lines the Commission has required a ten-minute schedule at night, holding it unreasonable, especially in winter, to require passengers to wait longer for a car, even though fewer cars would provide seats for everyone.

The result has been a marked improvement in service, although conditions are still far from ideal, and full relief can only be secured by the construction of new lines. An investigation of conditions in Manhattan prior to and after the issuance of these orders showed that upon only one line far out had the result been a decrease in the number of cars run, that even there the new service was adequate, and that upon all others the service had improved from eleven to fifty-seven per cent. Similar comparisons in the other boroughs would show similar results. It is worthy of note in this connection that improved service has not been followed always by a decrease in net earnings. In many instances the readjustment of the service resulted in better service, and also in larger financial returns.

It would hardly be possible to enumerate in detail the many improvements in service that have been ordered. A few may be cited to show their general character. At certain connecting points

companies have been required either to erect shelters or to keep a stationary car for the accommodation of waiting passengers. The ventilation, heating and lighting of stations and cars have been the subject of numerous orders; and in 1908 a general order was made, applying to all transportation lines in the city and prescribing the limits of temperature to be maintained in the cars. The giving and acceptance of transfers has often been required by the Commission in cases in which such action might legally be taken. Additional tracks have been ordered to facilitate the operation of cars. In scores of cases cars have been ordered run further toward the end of the line, for they were often improperly turned back, passengers being ordered to take "car ahead" or "next car," with much crowding and delay as the result.

#### *Service on Rapid Transit Lines*

The subway service has also been improved in many ways. A new signal system has been installed, upon the initiation of the Commission, to facilitate the operation of more trains by reducing the headway. The cars are being equipped with center side-doors to enable persons to enter and leave the cars with greater comfort and speed. The station platforms are being lengthened to permit ten-car trains to be operated instead of eight as at present. When all the changes are completed, which have been ordered by the Commission, it is expected that the carrying capacity of the subway will be increased from twenty to forty per cent. Already the headway between trains during rush hours has been reduced sixteen seconds, and during non-rush hours from three minutes to two and one-half minutes—equivalent to an increase in service of from thirteen to twenty per cent. A further reduction of eighteen seconds is expected when all the improvements have been completed.

Many minor improvements have also been made, such as additional stations, stairways, elevators, escalators, guard rails, station signs and car destination signs. The ten-candle-power lights furnished in the cars have been ordered replaced with sixteen-candle-power lights for the benefit of subway readers. Other improvements are under consideration.

Service has been improved on the elevated railroads in much the same manner as on the surface and subway lines. More cars

are being operated in longer trains. Through service has been substituted for stub-end operation. One company has installed an improved type of air brake on its cars. New stations have been erected and conveniences added at existing stations, such as additional platform space, better station signs, better coverings for stations, increased number of stairways, the widening of stairways, the installation of escalators, etc. The third tracking of certain lines, making possible better express service and extensions, are now being considered.

The steam railroads, particularly on Staten Island and Long Island, have been ordered to improve their service, to run their trains more regularly and to adjust their schedules to the schedules of other transportation lines at connecting points. For example, the Commission found it necessary to order that trains be scheduled to connect with the municipal ferry boats running between St. George and Manhattan, that stations and platforms should be properly lighted at numerous places, and that unnecessary noises and smoke nuisances from engines and shops be suppressed.

The vast majority of matters are handled without formal hearings and orders. If it can be adjusted by letter, telephone or personal consultation the case is closed. Thus in the three years ending July 1, 1910, the transportation bureau made about 3,000 service investigations, about one-fourth of which were based on complaints. The Commission issued nearly 150 orders as a result of investigations relating to service and general improvements. During 1908 transportation service in the city was increased by about 850,000 seat-miles, and in 1909 by more than 1,800,000 seat-miles, as was shown by observations made both before and after suggestions or orders for the improvement of service.

#### *Matters Relating to Gas and Electricity*

The activities of the Commission in the regulation of gas and electric service originate chiefly from complaints from consumers, and probably in no other field has the action of the Commission been more immediately and visibly helpful to the millions of people in Greater New York. The complaints have reference to inaccuracy of meters, poor quality or inadequate supply of gas or electricity, objectionable forms of contracts presented by the companies, dis-

criminations in charges, failure to compute charges according to the proper rule under the contract, failure to make connections with premises, failure to supply "breakdown service," improper discontinuance of supply, the requiring of unreasonable deposits by consumers, failure to extend gas mains or electric lines, too small service pipes or street mains, and many other matters of a similar nature.

Every gas meter is now tested before being put into use. Under the practice established by the former State Inspector of Gas Meters, meters had been stamped and approved without being tested, only a few samples from a lot of new meters being actually tested. Also the brass tag, indicating approval, was so attached that the meter might be changed, repaired, or completely overhauled without disturbing the evidence of approval; and a wrong method had been employed for computing the percentage of inaccuracy. All of these defects have been remedied and the work is now efficiently performed.

From July 1, 1907, to July 1, 1910, the Commission's inspectors tested and sealed 991,924 gas meters, more than three-fourths of all the gas meters in use in the City of New York. Of the remainder (less than 300,000) none have been in use untested more than seven years, for the Commission has ordered the removal of all meters that had been in use seven years or longer. Of course, the greater part of these tests were of new or removed meters which had to be tested before installation, but 15,563 were tested upon complaint of inaccuracy from consumers. In 1908, 7,346 were tested on complaint; in 1909, 4,068; the falling off being probably due largely to the increased general accuracy of meters caused by the large number of previous tests, the removal of all meters more than seven years old, the eighty-cent gas case decision giving the first actual reduction to many consumers, and the practice recently adopted by certain companies of making meter tests upon request of consumers without the necessity of application to the Commission. The Commission also tests electric meters on complaint.

The general attitude of consumers toward the gas and electric companies seems to have improved, a result doubtless due in large measure to the increased interest taken by the companies in complaints since the Commission began its investigations.

Aside from complaints with reference to meter tests, the Commission handled, through its bureau of gas and electricity, 961 complaints in the three years ending June 30, 1910. Each complaint is first taken up with the company affected, by telephone or by letter; and if necessary an inspector of the Commission is sent to investigate the facts. If, after correspondence on the subject, the matter is not adjusted to the satisfaction of the parties, an informal hearing is held before a Commissioner. His recommendation practically without exception has been accepted by both parties. The adjustment of these miscellaneous disputes goes far toward preventing similar disputes in the future; for when it appears that the methods of the company are at fault, it is advised to reform its practices.

Early in 1908, a general investigation was undertaken of all electric companies. One important matter taken up was the refusal of certain electric companies to give "breakdown" or auxiliary service to consumers having their own electric plants. One company had for two years refused to contract for this service, and the few old contracts still in force were expensive to consumers. The Commission considered this class of service reasonable and necessary, and finally a voluntary adjustment was made by which the company undertook to render the service at a cost much lower than that formerly charged, but, of course, somewhat in excess of the rates for regular consumers.

The Commission found the retail lighting contracts in use by the electric companies complicated and in many respects burdensome upon consumers. At its suggestion a much simpler form has been put in use, which can be terminated by the consumer on three days' notice instead of binding him for a year, as was often the case formerly. Five out of nine companies have also left out the provision for a guaranteed minimum payment per month.

The wholesale electric contracts were also complicated, various in form and in many cases apparently discriminatory or unfair, through the existence of riders or special contracts not known to all consumers. The Commission issued an order requiring all schedules of electric rates and forms of contracts to be filed with the Commission and posted for public inspection, and making illegal all discriminations, rebates and special rates. In many other respects, the practices of the companies have been remodeled to the benefit of the companies as well as the public.

The Commission found a great variety of electric meters in use, some of which were not satisfactory. After an investigation and report by an expert specially employed for the purpose, the Commission adopted an order prescribing certain specifications for all electric meters thereafter to be installed within the district. At the same time an order was adopted certifying certain types of meters as conforming to the specifications adopted. These were particular types of meters made by the various manufacturing companies; and additions have been made to the list of approved types of meters by amendatory orders from time to time. In October, 1909, the Commission adopted an order prescribing rules and regulations to be observed by the companies in testing their electric meters for accuracy and in making monthly reports of all such tests to the Commission. It is to be noted that the statute does not require, and the Commission has not yet required, that no electric meter should be put in use without being tested by the Commission's inspectors, but merely that no meter shall be installed whose type has not been approved by the Commission.

#### *Gas and Electric Rates*

Just prior to the creation of the Public Service Commission, the rates for gas and electricity had been scrutinized by a legislative commission and a state board. As a result, the legal maximum for nearly all of Greater New York had been fixed at eighty cents per thousand cubic feet of gas and ten or twelve cents per kilowatt hour of electricity. The electric companies accepted the reduction without litigation, and so did certain of the gas companies, but the Consolidated Gas Company and its subsidiaries resisted the law, and when the Commission took office, an injunction suit was being tried in the federal court. The Commission actively defended the legality of the rate, carrying the case to the United States Supreme Court. A final decision was obtained in January, 1909, upholding the statute, and the consumers of gas were refunded their overpayments.

These reductions naturally made extensive rate investigations unnecessary, and only recently have any applications been made to the Commission for the reduction of gas or electric rates. Three cases have recently been begun—two relating to gas and electric rates in the Fifth Ward of Queens, where reduction had not been



made by the statute above referred to; and the other relating to the price of gas in a section of Brooklyn where the rate is higher than elsewhere.

Many minor matters affecting rates have been adjusted in a manner which practically amounts to a lowering of charges. The required re-establishment of "breakdown service" by the Manhattan electric companies has resulted in a reduction of expense to many office, shop, theatre and apartment buildings. Minimum charges and guarantees have been dropped by several companies. Fees for service connections have been held to be improper. Refunding on fast electric meters has been standardized. Gas meters must now be tested more frequently. Numerous complaints about overcharges have been adjusted by informal action.

### *Street Car Fares and Transfers*

The number of formal complaints against the rates of common carriers has been much larger; and until a few months ago, the Commission could not institute a rate case on its own motion. The question of the proper fare to be charged to Coney Island—the great seaside pleasure resort—has been the one to attract most attention. In 1907, the legislature passed a bill reducing fares to Coney Island from ten cents to five cents. Governor Hughes vetoed this bill on the ground that the matter was one which ought to be investigated by the Public Service Commission before action was taken. Soon after two residents of Brooklyn filed complaints with the Commission alleging that the fare of ten cents charged by the Brooklyn Rapid Transit Company was excessive and unreasonable. The Commission caused an appraisal to be made of the property of the various lines; and after investigation and extended hearings, a decision was reached dismissing the complaints.

The same citizens who presented complaints against the Brooklyn Rapid Transit lines also complained of the rate charged by the Coney Island and Brooklyn Railroad Company, which operated surface lines by six different routes from various points in Manhattan, Brooklyn and Queens to Coney Island. At that time this company charged ten cents on Saturdays, Sundays and holidays, and five cents on other days. The complaints alleged that a ten-cent rate was unreasonable and that the fare should be uniformly five

cents. While investigation of the case was in progress, the company raised its rate to ten cents at all times. The Commission dismissed the complaints, finding that a fare of five cents on all days would not be sufficiently remunerative. One of the complainants promptly instituted proceedings against the new rate of ten cents, urging the restoration of the old rate of five cents on days other than Saturdays, Sundays and holidays. The case is now pending.

The surface lines in Manhattan and the Bronx had been charging five cents for transportation in each borough with a system of transfers that enabled a passenger to ride from any point in either borough to nearly any other point in the same borough for a single fare. This was one of the benefits of consolidation of the lines. In 1907 and 1908, with the approval of a judge of the federal court, this system was broken up into several separate and distinct systems, receivers being appointed for each. Transfers at junction points were abolished between the separate systems, and the routing of cars was greatly altered. Thus it came about that thousands of persons suddenly found it necessary to change cars frequently and pay ten or fifteen cents when for years they had been paying five cents for a through ride.

The Commission began proceedings to determine what action should be taken and took up the most pressing case first. It soon became obvious that the proper remedy was to compel the re-establishment of through routes and joint fares with a proper division of the fare between the company giving a transfer and the company accepting it. The Metropolitan lines and the Fifty-ninth Street line were ordered to exchange transfers, the former being allowed three and three-fourths cents and the Fifty-ninth Street line one and one-fourth cents out of every five-cent fare. The receivers took the case into court on the ground that the Commission had not been given power to order transfers and to divide the fare. To remove all doubt upon this point, the legislature last spring amended the law and specifically conferred the power to compel the establishment of joint fares by transfer from one street car line to another. An order was subsequently issued by the Commission requiring the establishment of through routes and transfers between the lines of the Metropolitan system and the Fifty-ninth Street line. At the time of this writing the date for compliance with the order had not been

reached. But the Commission now has power to deal with the question, and the whole subject will need to be carefully studied and rearranged. The present condition is unfair to the public, and perhaps the old was so greatly abused as not to be fair to the companies.

Several other cases have been decided. In one, the Commission required two companies to exchange transfers at certain points in Staten Island as apparently required by law. The company brought suit to prevent the enforcement of the order, the lower court upheld the order, and an appeal has been taken. In another, the complaint was dismissed because the receipts did not pay operating expenses. In other cases, reductions were secured while the complaint was pending. A company was ordered to cease the collection of excess fares between two points and excess fares on other lines were discontinued voluntarily.

#### *Approval of Securities*

Since the Commission came into being, applications have been made for the approval of securities having a par value of nearly \$300,000,000. Of this amount, about \$80,000,000 have been authorized. Every application is subjected to a searching investigation into the condition of the company's finances, and often an appraisal of its physical property has been made. The purposes for which the securities are to be issued are carefully scrutinized to see that no charges are made to capital that should go to operating expenses.

The order of approval states the purposes for which the money may be expended, the rate at which the securities may be issued, the period within which any discounts, commissions and expenses of the issue shall be repaid and often the method of amortization. It usually provides also for periodic reports to the Commission, the audit of the accounts by employees of the Commission and public sale to the highest bidder, unless a certain price is realized at private sale.

In certain instances, the Commission has allowed considerable leeway in the purposes of expenditure, but in such cases has required the company to submit the audited vouchers for approval before the amounts are paid out of capital. If the issue is secured by mortgage, the mortgage must also be approved according to the statute, and

care is taken that the security offered shall be as good as the company is able to give.

Among the most important applications that have been made are those relating to the reorganization of the Third Avenue Railroad Company, which has been operated by a federal receiver about three years. The first application of the bondholders' committee called for the issuance of about \$64,500,000 in securities; and the second, for about \$55,000,000; the corresponding securities of the old company being about \$53,500,000, not including other debts to be paid. Both applications were denied, the principal reasons being, omitting legal questions and defects in evidence and procedure:

(1) The capitalization of franchises will not be allowed, directly or indirectly, except so far as permitted by statute.

(2) Overcapitalization leads to inferior service and unwarranted exactions. The people of New York have too vivid evidence upon this point to forget its importance.

(3) The mere fact of investment does not establish a perpetual value not only because a mistake in judgment may be made, but also because property may be allowed to deteriorate, because progress in the arts may make it obsolete, and because a change in economic conditions may decrease the use made of it by the public. It is a well-known fact, and was stated in evidence, that the physical property of the Third Avenue system was allowed to fall into disrepair. Certain lines are still operated by horses, certainly an obsolete method of transportation. Other lines have ceased to be of value, and their operation has practically been abandoned. To assert that because a company at one time put money into property which has become useless, wornout and obsolete, a successor company which purchases that property at foreclosure sale should be allowed to capitalize for the amount originally expended is so absurd as not to require further discussion. Investment may be evidence of the good intentions of the investor, but it is not an infallible standard of perpetual value. *The Commission believes the proposition to be sound that capitalization should have a direct relation to value.*

(4) The present value of the property, as shown by a careful appraisal, allowance being made for contractor's profit, engineering, administration, development expenses and other legitimate expenses, was several million dollars below the proposed cap-

italization. In arriving at this conclusion, the Commission adopted the principles (*a*) that the present value of property is not determined by the original cost, (*b*) that allowance must be made for appreciation and depreciation, (*c*) that its actual condition, its age, its adequacy, its fitness to the needs of the community are most important and fundamental considerations, (*d*) that property that has ceased to exist, although originally a legitimate charge to capital, should not be capitalized in perpetuity, and (*e*) that charges for maintenance, replacements and supercessions are prior claims to dividends.

(5) The net earnings for any single year or series of years are not a proper basis for determining the capitalization of a company, particularly when the rates charged for the service rendered may be regulated by the state. An ordinary business corporation fixes its own charges; it is not subject to state regulation; but a public service corporation does not have such privilege. The fundamental factor in rate regulation is a fair return upon the value of the property. Hence, if a company issued stocks and bonds upon the basis of earnings for a given year or period, and if it were found that the rates then charged were too high and were reduced by the state, resulting in the reduction also of net earnings, the capitalization once justified by earnings would be no longer proper. This is illogical and unsound.

(6) The amount of capital represented by bonds should not be in excess of the amount upon which there is definite certainty that interest may be earned. It would obviously be unwise and useless to approve a plan which might easily mean another foreclosure and reorganization in a few years. This is the second time within ten years that the Third Avenue Company has been in the hands of a receiver. It is time that a conservative plan were adopted, and upon such sound principles that another cataclysm will not be necessary.

(7) The applicants admitted that the present earnings were not sufficient to pay interest and dividends upon the proposed issues, and the Commission found that the prospective earnings were so uncertain that approval should not be given.

The plans for the reorganization of the other systems have not yet been perfected and submitted. Nearly all of the companies

operating surface lines in Manhattan and the Bronx must be reorganized, and when this has been done upon a sound and conservative basis, the street railways will be in a position to serve the public better and offer to investors securities that represent actual property and definite prospect of continued earning power.

In another case, during the course of the investigation by the accountants of the Commission, it was found that items amounting to nearly \$1,500,000 had been improperly charged. The accounts were corrected before approval was given. The company, having a limited loan of certain property, was required to set aside annually a sinking fund to pay off the bonds within the period of the loan.

The position of the Commission upon certain other matters is shown by the decision in the application of the Long Acre Electric Company for permission to issue \$50,000,000 in bonds and \$10,000,000 in non-voting stock, the proceeds to be used to establish a competing electric plant in Manhattan. The Commission refused the application because:

(1) The company's title to the franchise was clouded, and the expenditure of such sums under uncertainty would be unwise.

(2) The amount of bonds of the new issue was very much too large as compared with the amount of voting stock.

(3) The construction contract did not adequately protect the interests of the company or of the public.

(4) The applicant did not prove that the existing companies were not properly conserving the public interest and convenience, and that it would be to the advantage of the community to have a new company authorized to enter the field.

(5) If a competing company were allowed to begin operation, it did not seem likely that it would continue to operate independently for any considerable period.

(6) Competition would cause inconvenience and expense to the public, would cause duplication of plant, would lead to waste, and ultimately be urged as a reason why rates should not be reduced to consumers.

(7) Practically all of the advantages claimed by the applicant as the probable results of competition can be secured through the powers of this Commission, and until it has been demonstrated that these are ineffective, it would be unwise to adopt a method which has proved to be ineffective in the past.

*Uniform Accounting*

The establishment of uniform and scientific accounting by public service corporations has long been recognized as necessary to the solution of public service problems. The former Board of Railroad Commissioners was unable to secure complete and accurate reports from companies because it lacked the power to prescribe a system of accounts and records. The Commission has the power and established some time ago complete accounting systems for railroad companies, street railroad companies, gas companies and electric companies. From these prescribed accounts the companies make up their reports to be filed with the Commission, which now show practically everything which the books themselves would show. The reports are carefully scrutinized before being made public.

The Commission has also standardized the traffic records kept by transportation companies, and the reports of the companies of their traffic operations have become of great assistance in regulating service. Certain companies formerly kept no adequate records; great diversity also existed. The Commission has introduced a new traffic account unit—the car-seat-mile—obtained by multiplying the number of miles traveled by the number of seats in the car. It is more exact and allows comparisons to be made that are of greater value than formerly compiled.

Within the limits of a brief paper, it is impossible to describe the excellent work that has been done by the various departments, such as the bureau of accounts and statistics, the bureau of franchises and the legal department. The compilation, analysis and publication of the financial and operating statistics of the public service corporations in the First District have proved of great benefit to companies, investors, officials and the public. The franchises of the various corporations have been classified, arranged, indexed and charted for the first time in the history of the state or city. When it is remembered that there have been incorporated about seven hundred railroads and street railroad companies whose proposed routes lie wholly or partly within the First District, and more than three hundred gas and electric companies, and that the local franchise rights have been derived from no less than forty different municipal corporations and political sub-divisions now consolidated in the

Greater City, one gets a glimpse of the time and effort required. This work has been of special value to the Commission in various cases, and particularly in connection with its decisions upon franchises submitted for approval, and in its efforts to have unused tracks removed from the surface of the streets and unused franchises surrendered. Suits for the annulment of franchises are now pending.

### *Rapid Transit*

The rapid transit construction work of the Commission, while not so varied as the functions of regulation, consumes about two-thirds of the annual appropriation, not including the cost of construction itself. When the Commission came into office, it found the "Interborough" subway approaching completion and contracts just let for the "Loop" connecting the Williamsburgh and Manhattan Bridges with City Hall Park. A study of the plans showed that important changes should be made, such as a reduction in grades, the provision of greater headroom to allow the operation of surface or suburban cars, and an increase of about twenty per cent in the line's capacity. These were made and the line is awaiting the completion of the terminal by the Department of Bridges. The construction cost of this Loop line will be about \$10,000,000.

The Rapid Transit Commission had prepared plans for an important subway in Brooklyn, the so-called Fourth Avenue route, to extend from the Manhattan terminal of the Manhattan Bridge, across the bridge, through streets to Fortieth Street, and thence by means of two separate branches to Fort Hamilton and Coney Island. The Commission reviewed the plans, made certain improvements similar to those made on the Loop lines, and in May, 1908, submitted contracts to the Board of Estimate and Apportionment for final approval, covering the route as far as Forty-third Street. Action on the matter was delayed for more than a year, but finally, in the fall of 1909, the Board of Estimate and Apportionment approved the contracts. The work is now under way and will be completed, it is expected, next fall. The cost will be about \$16,000,000.

The nearness to the constitutional debt limit (ten per cent of the assessed value of real estate) has prevented the construction of



other subways. Appreciating the necessity of an amendment to the constitution, the Commission repeatedly urged and finally secured an amendment by which city bonds devoted to self-sustaining enterprises, such as docks and subways, should not be included in the ten per cent to which the city's debt is limited. The amendment was passed by the legislature in 1908, approved by the succeeding legislature in 1909, and ratified by the people at the fall election in 1909.

In the meantime, the Commission was at work preparing a comprehensive scheme for rapid transit development, and contracts and plans for the most important lines. It decided to build a through route between Manhattan and the Bronx, to complete the Loop lines in Manhattan and Brooklyn, and to extend the Fourth Avenue line to Fort Hamilton and Coney Island. This big route, known as the Triborough system, will cost when completed about \$125,000,000. A considerable portion is now under construction, and bids are to be opened this month (October) for most of the remaining portions.

Negotiations have been conducted for some time, but have not been completed, relating to extensions of the Interborough system down Seventh Avenue, up Madison Avenue, in the Bronx and in Brooklyn. The company has also submitted propositions for adding express tracks to their elevated lines for constructing extensions and for the operation of the Steinway tunnel, which has been idle for several years. If all the plans now under consideration could be carried out under conditions that would protect the interests of the public, congestion of population would be relieved, transit conditions would be greatly improved, new areas would be opened for development and the city would have made up for the many years when nothing was done. Yet transit facilities would even then not be in excess of the demands. The city is growing at a rapid pace, and the problem is not only how to provide for transportation already necessary, but how to prevent the recurrence of indecent conditions and how to meet the demands of the immediate future. Rapid transit lines cannot be built in a day, and no line has yet been operated in advance of the needs of the community. In 1909-10, the local transportation lines carried over 130,000,000 more passengers than they carried in 1908-9. In three years this growth would exceed the capacity of the present subway, which seems to support the assertion made by some that a rapid transit line should be built every three to five years for some time to come.

## SUPERVISING ENGINEERS AND STREET RAILWAY SERVICE:

### THE VALUE OF A BOARD OF SUPERVISING ENGINEERS IN SECURING EFFICIENT STREET RAILWAY SERVICE

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BY GEORGE WESTON,

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Supervision of the affairs of public utility companies in the interests of the general public has become necessary in order to insure correct financing, proper maintenance of physical property, and adequate service at reasonable rates.

Supervision of public utility companies, in general, has been provided for in several of our States; in some instances by increasing the powers of the state railroad and warehouse commissions, as, for instance, in Massachusetts and Wisconsin, or by creating public service commissions, as was done in the State of New York.

The United States Government has taken up the supervision of steam railroads through the Interstate Commerce Commission, and also is conducting investigations into various public service corporations and combinations of corporate interests to ascertain if their operation is strictly within the law.

The functions of railroad and warehouse commissions, public service commissions and the Interstate Commerce Commission are general in their scope. The services rendered by the national and state commissions to the communities over which they exercise jurisdiction have been of notable value. Public carriers and public utility corporations of all classes have felt the chastening influence of those bodies, and have been led to correct abuses which have developed. The work of the state commissions in the regulation of street railways has been extensive and of the highest order of efficiency. The careful and far-sighted control exercised, for example, by the Massachusetts commission over the capitalization of public service corporations under its jurisdiction, and the progressive and enlightened administration of the Wisconsin and New York commissions have brought credit upon these bodies and satisfaction to the public at large.

The growth in the size of our large cities and in the complexity of transportation problems resulting therefrom has brought upon the state commissions an enormous amount of work of a highly specialized character, requiring the devotion of a large amount of time and the possession of special knowledge and skill.

The result has been that in many States, possessing large cities, the state commissions have found their time largely monopolized in considering the transportation difficulties of a relatively small portion of the area under their jurisdiction. The enormous amount of detail work which is involved in the investigation of traffic conditions, the settlement of fare and franchise controversies, and in the many other questions surrounding city railways, has resulted in delay in settling cases arising in other portions of the State. The feeling, therefore, has grown up that the state commission should either be augmented or relieved from handling the transportation problems of our large cities.

The methods used in administering the affairs of street railways in large cities are various. New York, for example, has created two commissions with coincident powers, one exercising exclusive jurisdiction over Greater New York City, and the other controlling the balance of the State. This plan has worked admirably. The objection which was raised at the time the law was in a formative stage, that there would be a clash between the two commissions, has not, so far, materialized.

The State of Illinois for many years has been engaged in the regulation of corporations conducting "business affected with a public interest." For many years the State Railroad and Warehouse Commission possessed broad powers and exercised an extensive influence over quasi-public corporations. The work of the commission, however, has been largely centered upon disputes concerning facilities and charges. The commission possesses no power over the capitalization of corporations, and has never engaged extensively in the work of what might be termed "constructive regulation," such as, for example, the analytical criticism of the transportation service, with suggestions for its betterment.

As a result of the prolonged controversy between the city of Chicago and its street railways, and the litigation arising therefrom, an important step in the development of an efficient system of public regulation of this type of common carrier has been made. "The

Board of Supervising Engineers, Chicago Traction," was created by the ordinances of the City Council of Chicago, granting to the Chicago City Railway Company and the Chicago Railways Company, which own and operate street railway lines within the corporate limits of the city, the municipal rights under which they now operate. These ordinances were passed on February 11, 1907, and in addition to conferring the franchise rights upon these companies, create and define the powers of the Board of Supervising Engineers.

The Board of Supervising Engineers is the outgrowth of a long and illuminating struggle between the city of Chicago and its street railway companies for the establishment of a practical relationship. The readers of *THE ANNALS* are already familiar with the history of this controversy, through the articles by Dr. Willard E. Hotchkiss, of Northwestern University, upon "Chicago Traction: A Study in Political Evolution," and "Recent Phases of Chicago's Transportation Problem," appearing in the November, 1906, and the May, 1908, issues of *THE ANNALS*, respectively. It will, therefore, only be necessary for me to review briefly those circumstances which are responsible for the creation of the Board of Supervising Engineers, Chicago Traction.

Street railways in Chicago were originally constructed under various ordinances passed by the city in or about 1858. Under these ordinances the companies were given the right to operate horse railways in certain specified streets for a period of twenty-five years, and thereafter until the city of Chicago should purchase the tangible value of the company at its appraised valuation. The ordinances provided that the city could exercise the right to purchase after six months' notice, and by a series of court decisions, rendered at later dates, it was held that this right was assignable to any third party which the city might select. Numerous subsequent laws and ordinances were passed, designed to extend the franchise privileges of the street railways in Chicago. Under these ordinances, and particularly those passed in 1865, the street railway companies later set up the claim that their franchises were inviolable for a period of ninety-nine years from the date of the original grant. Ugly charges of improper influences exerted upon the City Councils and state legislature were publicly made, and, as a result, the relations between the municipality and the companies became extremely bitter. In spite of the friction, however, which was always more or less evident,

the city continued to grant from time to time the right to build extensions to the various companies occupying its streets, usually providing, however, that the rights to these extensions should terminate in twenty years from the date of the passage of the ordinance.

The expiration of the twenty-five-year period in 1883 found neither the companies nor the city ready to test their relative rights, and after considerable negotiation it was decided to extend the grants for a period of twenty years, without prejudice to the rights of either party. When the extension expired, in 1903, the majority of the people of Chicago had come to believe that a radical revision in the relations of the companies and the city should be made. The request of the companies for a further extension upon the terms heretofore prevailing was refused, and it was evident that no compromise was possible. A legal battle, notable for its importance and stubbornness, was begun. The franchise rights of the companies were first reviewed by the state courts, which held that the Act of 1865 extended the franchise of the corporation for ninety-nine years. The case was appealed to the Supreme Court of the United States, where the claims of the companies were substantially demolished. (*Blair vs. Chicago*, 201 U. S. 400.)

During the litigation the existing status had been preserved by ordinances reserving all of the city's right, but granting to the companies a license to operate until such time as the dispute might be finally settled.

While the legal battle was progressing, the city had not been idle. Confident in ultimate success, the advocates of public participation in street railway matters had secured the passage of a statute by the legislature of Illinois, in 1903, authorizing municipalities to construct or acquire street railways, and to provide funds therefor by the issue of special certificates, secured solely by the properties and revenues of the street railways themselves. The proposition to take advantage of this statute was ratified by a popular vote in the city of Chicago by an overwhelming majority. An ordinance was passed, authorizing the issue of \$75,000,000 of special certificates for the purpose of acquiring all of the street railway lines in the city, including those in litigation. The validity of the ordinance was upheld by the lower courts, but the value of the statute was practically destroyed by the Supreme Court of Illinois, which

decided that the certificates would constitute a debt of the city, and could not be issued, because the city had already reached its constitutional debt limit.<sup>1</sup>

This defeat, however, did not give to the street railway interests more than a brief respite. The strong public sentiment, as shown at the election authorizing the issue of special certificates, made it likely that a constitutional amendment could in time be forced to adoption which would raise the debt limit or exclude this class of security from the computation. There could be no dispute, moreover, of the right of the city to assign to any successor company the privilege, reserved under the Act of 1858, of purchasing the street railway properties at their appraised value.

When the Supreme Court of the United States upheld the Act of 1858, the companies, therefore, found themselves in an exceedingly weak position, which necessitated that they deal fairly and generously with the city.

The nature of the situation which presented itself has been admirably analyzed by Walter L. Fisher, special traction counsel, in his brief in the so-called "Venner Case," before the Supreme Court of Illinois, as follows:

It must be apparent that there was but one basis possible for an adjustment between the companies and the city. The city already had the right to terminate all of the unexpired grants of the companies, except those under the comparatively few unexpired ordinances passed after 1887. It could clearly take possession of all the streets upon which the franchises had then expired, and could turn over its right to purchase the physical property on all the remaining important streets to any corporation formed for this purpose, with which satisfactory arrangements could be made. This corporation could thus acquire, by purchase, or by construction, the entire principal parts of the railway systems, leaving the few unexpired term grants to be turned over to it upon the best terms that the old companies could obtain or to be acquired by it as they expired thereafter from time to time. This new company could hold and operate the property upon such terms as might be agreed upon between it and the city, and subject to the right of the city to take it over whenever it desired to do so, and had established its legal authority and its financial ability to undertake the enterprise.

If the city chose to wait until it had first established its legal and financial ability to undertake municipalization without resorting to the agency of an intermediate corporation, it could, of course, have followed this policy and have permitted the railway companies to continue to operate, at the sufferance of the city. This policy, however, was involved in serious public dis-

<sup>1</sup> *Lobdell vs. Chicago*, 227, Illinois, 218.

advantage. During the prolonged and bitter controversy between the city and the companies, the street railway equipment and service had deteriorated, and comprehensive reconstruction, re-equipment and extension were imperatively necessary. The right of the city to purchase was a right which could be exercised at any time, on six months' notice, by paying the appraised value of the property then constituting the street railways to be acquired.

The power of the city to exact compensation from the companies for the use of its streets had been established by decisions of the Supreme Court of the State. The companies had accepted ordinances exacting large payments of money to the city as compensation. This money had been used by the city for street lighting and constructing viaducts and subways. In any new grant to an intermediate corporation, or in any extension or continuation of the rights of the existing companies, the city proposed to insist upon this right to substantial compensation, so that it might thus acquire funds to be used for the ultimate purpose of acquiring the properties, for constructing central subways for street railway use, or for the care and maintenance of the streets, or any appropriate purpose.

There were three forms in which the payment to the city might be fixed—an annual fixed sum, a percentage of the gross receipts, or a portion of the net receipts. The fairness and superiority of the third plan was apparent, and has long been generally conceded by those who have studied the public utility problem. The difficulty in its adoption, however, has been the refusal of public utility corporations to consent to that degree of supervision of their receipts and expenditures that is absolutely necessary to furnish an adequate guarantee to the public that its interests will be protected under such an arrangement. A plan of measuring the city's compensation by a percentage of the net receipts would obviously not be fair to the companies, unless they were given reasonable assurances that their principal investment would be fairly estimated and adequately protected.

The right of the city to insist at all times that the companies shall furnish adequate street railway facilities had always been recognized, in theory at least, by the company; and the right to make reasonable regulations by ordinances for this purpose had been conclusively established in the courts. In practical operation, however, this power of regulation had been found unsatisfactory and inadequate. Many disputes had arisen from time to time, as to the reasonableness and as to the wisdom of municipal legislation and requirements of this character. It was recognized that the city could not, if it would, part with its power of future legislation by any contract ordinance; *but it was felt that the establishment of a competent Board of Engineers to supervise the rehabilitation of the properties and give their expert judgment upon such differences of opinion as might appropriately be referred to them, would result to the mutual advantage of the company and the city.*

The general principles just discussed were embodied in the ordinances of February 11, 1907. They do not change in any particular any of the fundamental provisions of the company's charter. Neither the character nor the objects of the corporation had been changed in any respect. Before

the ordinance was passed the city had the power to purchase the street railway properties upon a portion of the streets occupied by the companies, or to turn over that right of purchase to another corporation. The value to be paid was merely the value of the physical property at the date of the appraisement. Under the ordinances of February 11, 1907, this right of purchase remains substantially unchanged and the obligation unimpaired. The only change in this respect has been that the value of the properties on June 30, 1906, was fixed by an appraisal then made by three eminently qualified appraisers, in whom both the city and the company had entire confidence.

To this valuation is to be added the actual money expended by the companies hereafter for additions to the property and for such renewals as are properly chargeable to capital account, together with an allowance of ten per cent. as a construction profit, and five per cent. for brokerage upon all such expenditures. The total price thus fixed to be paid in the event of future purchase, must, in the very nature of the case, exceed the value which would, at any future time, be placed by appraisal upon the then existing physical property of the companies. To meet this excess, and to assure the future maintenance and renewals of the system, the ordinance provides for the establishment and maintenance of special reserve funds of six and eight per cent., respectively, to be used, so far as may be, to cover maintenance, repairs, renewals and depreciation. That the companies may have no incentive to fall short of their obligations in this respect, it is provided that any unexpended balance of these funds shall never be returned to the companies, but shall pass to the city or its licensee in the event of future purchase. This provision is not only justifiable on the ground of wise and fair protection of the public interests, but may be considered as a part of the compensation which the city is entitled to exact as a condition for the continued use of the public streets. If the companies are to be protected in their legitimate capital investment, they must certainly be required to protect that investment in the interest of the city, so that at all times the properties shall be kept up to their highest efficiency by adequate expenditures for maintenance, repairs and renewals, and that there shall be an adequate reserve fund to cover depreciation.

◀ Having adopted the theory that the city's compensation should be a percentage of the net receipts, it was necessary to fix fair provisions for determining what should be considered as the net receipts; hence the provision in the ordinances for keeping the accounts in a form to be approved by the city comptroller and for an annual audit and account; hence the provision for paying, out of the gross receipts, the operating expenses, including the expenditures for taxes, insurance, maintenance, repairs, renewals and depreciation; hence the provisions for reasonable limitation of the salaries of officers, agents and attorneys, the sale of worn-out or unnecessary property, and the payment of personal injury claims. Having taken care of all these items, the ordinances provide that the company shall be entitled to reserve an amount equivalent to five per cent. upon the capital investment as an annual interest charge. Not until all these allowances have been made is the amount to which the city is entitled ascertained. Then, and not till



then, is the city entitled to fifty-five per cent. of what are then the net receipts, the remaining forty-five per cent. going to the companies, in addition to the annual interest charge of five per cent. upon its total capital account.

In other words, once having fixed the present value of the property of the companies, and provided that the city must, before it purchases or authorizes a purchase, pay or have paid to the companies this value, together with the cost of subsequent additions, every requirement of the ordinances of February 11, 1907, will be found, upon examination, to be simply a fair and reasonable provision for protecting both the companies and the city, as to the character and cost of these additions and the maintenance and extensions of the properties. Every provision which does not relate to this subject will be found to be a fair and reasonable provision for assuring that the companies shall carry out their obligations to render the public service, which is the only justification for their existence and occupation of the public streets, and for removing or lessening the customary friction between the city and the companies in the fulfillment of their necessary and proper relations to each other.

The ordinances under which the Board of Supervising Engineers is created provided a plan of municipal regulation of a quasi-public corporation organized for individual profit, the municipality participating in the profits without assuming any responsibility, and eventually may become the owner of the property. The regulations prescribed in the ordinances are based upon fair dealing between the public and the corporations, and the production and maintenance of a property and equipment that will make possible the best of service. It is the duty of the Board of Supervising Engineers to see that certain of the provisions of the ordinances are properly carried out.

The ordinances do not confer upon the Board of Supervising Engineers the direct authority to control or regulate the service, except as to a few specific matters; but they do authorize and require the board to exercise the most detailed supervision of the physical property of the street railways upon which the service immediately depends. Good service cannot be rendered without good tracks, good cars and good equipment. Good tracks, good cars and good equipment naturally and powerfully tend to produce good service.

Nevertheless, good service may not be rendered even with the best of railway construction and equipment; and in this event the remedy must be the enactment and enforcement of public regulations under the police powers of the city (which, under these ordinances, are properly reserved), acting through the elected representatives

of the people, the city councils and the mayor. This distinction must be constantly borne in mind in locating responsibility—both credit and censure—for the existing service rendered by the street railways of Chicago.

In order to give good street railway service, the first essentials are:

- (1) Good track, properly laid out and connected.
- (2) Good cars and equipment in sufficient numbers to properly take care of the riding public.
- (3) Commodious car stations, properly designed and equipped, together with proper facilities for inspecting and cleaning the cars daily; and located with respect to the lines operated and the headway of traffic so that the "dead car mileage" will be a minimum for the entire system.
- (4) A power system that will insure a minimum first cost of production, and a distribution system that will be the most economical in supplying ample power to all parts of the system in accordance with the demands and within the limits of a predetermined minimum average drop.

The Board of Supervising Engineers, Chicago Traction, since its organization in May, 1907, in addition to having kept a close supervision over the accounts of the companies, has been principally engaged in the design and supervision of the construction of tracks, cars, car stations, sub-stations and an electrical distribution system, to properly put the railroads in condition to furnish first-class service.

The peculiar value of a board of supervising engineers in securing efficient street railway service, to my mind, depends upon two factors:

- (1) That its members may consist of engineers who have specialized in street railroad work, and that their entire time and energies may be expended and concentrated on the work of the individual properties under their jurisdiction.
- (2) And that the street railway companies, as well as the city, are in direct touch with the work through their representatives on the board, which insures to the city a supervision over the companies that will protect the interests of the general public, and enables the street railway companies to fully protect their individual interests as well.

The Board of Supervising Engineers, Chicago Traction, is composed of a representative from each of the companies, as indicated in the ordinances, a representative of the city, and the third engineer, the latter representing both the city and the companies as chairman of the board. The personnel of this organization, it will be seen at a glance, gives full representation to all of the parties interested.

By the organization of this board, a sort of clearing-house has been established as between the city, the companies and the general public, and at its meetings all problems that arise are discussed and determined at once, or such progress made as will lead to a better and fuller understanding between the parties.

A competent force of engineers and accountants is employed, which, under the direction of the chairman and chief engineer of the work, keeps independent check upon the expenditures of the companies in accordance with the provisions of the ordinances, and in the manner prescribed by the Board of Supervising Engineers. In addition, the engineering force makes plans and specifications, inspects materials and supervises the work of construction, thus placing the board, as an independent organization, in direct contact with the receipts and expenditures of the companies, and the extensions, betterments and renewals of the property.

In brief, I might say, the value of a board of supervising engineers in securing efficient street railway service is plainly evident to any one familiar with the situation in Chicago, where, to-day, after little more than three years of supervision by the board, there are in operation systems of street railways equal in technical and operating efficiency to any in the country. It has been stated, and rightfully so, that the so-called "traction settlement ordinances," together with the Board of Supervising Engineers, have blazed the way for successful regulation of local transportation facilities by the municipality, and the co-ordination of the efforts of the street railway companies with the city and with the street-car riding public toward the achievement of an ideal street railway service.

The city of Chicago, like every other large municipality, will, within a short period of time, be face to face with a very important problem involved in the decreasing financial return on street railway investments, due in part to the increased cost of operation, resulting both from the higher technical standards of track, equipment and service, the increasing average length of ride, and also from the

decreasing average rate of fare due to the more general use of transfers.

The situation which confronts the transportation companies throughout the country is serious, and, unless some satisfactory solution can be found, contains the possibilities of grave dangers. The greatest difficulty which surrounds the satisfactory solution of this matter is the total non-acquaintance of the public at large with the nature of the problem.

I believe that one of the most valuable services which the state commissions, and other organizations intrusted with the duty of supervising street railway service and charges, can perform is to conduct a campaign of education which will place before the public the real facts of this problem.

The influence of such a board is toward good service—the best that can be afforded for the rate of fare paid. The street railway business, like any other business, must be a commercial success in order to permit it to live and give efficient service.

Much agitation has appeared in recent years, particularly in some large cities, over the question of a reduction in the rate of fare. The flat rate of 5 cents for a street-car ride in one general direction within the city limits regardless of its length, including transfers when necessary, has been the almost universal practice in American cities. In some instances six tickets for 25 cents, and other rates of fare during certain hours, have been in force; and a 3-cent rate of fare has been agitated, and is still being talked and argued, particularly in the cities of Cleveland and Detroit. This agitation for lower fares has resulted largely from incorrect information which the general public has acquired, through improper accounting on the part of the companies, which have in many instances used the earnings of the road to pay high dividends instead of applying a proper proportion of such earnings to repairs and renewals. The result has been an erroneous showing of high net earnings at the expense of a depreciated property or an inflated capital account, or both.

In many instances where the 3-cent fare agitation has taken tangible form it has been made a political issue, and the local street railway question has been used by politicians for their political advancement rather than for the purpose of adjusting the issue upon a fair and equitable basis as between the city and the company.

The income of street railway companies and kindred transporta-

tion companies is being constantly reduced per passenger carried, due to the granting of transfer privileges, free rides, etc.; and the net profits have been still more reduced by the increased length of average haul and the higher rate of wages and increased cost of materials. It is now a debatable question whether the rate of fare for pay passengers should not be increased rather than diminished, and whether it would not be practicable and more equitable to have a sliding scale of fare based upon the distance a passenger is carried rather than a flat rate of fare, requiring, in reality, a short-haul rider to pay a part of the cost to furnish service to the long-haul rider.

The ability of the surface lines to meet these reductions and live is due to superior technical efficiency and more economical operation, an increase in the density of population in the territory served, and an increased percentage of short-haul riders.

As a city grows in population and area, the street congestion increases, and high-speed roads, such as elevated roads and subways, become necessary. The cost of such lines per mile of track operated or per passenger carried is greatly in excess of the cost per mile of surface track operated or per passenger carried. All of these problems involve questions of financing and capital charges, a fair return upon the investment, and the responsibility of the municipal government in the premises, as well as the obligation of the transportation company.

Local transportation in the larger cities is a very complex and much involved question, requiring the services of experienced and competent men, actuated by the highest motives.

## COMMUNICATION

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### INDUSTRIAL ARBITRATION IN AUSTRALIA

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#### *Introduction*

In modern history there is no more interesting and important phase than the relation the state has borne to industry. More particularly is this the case with regard to the last seventy years. During this period the state has changed its position and is hastening to regard industrial activities from an opposite viewpoint. At the beginning individualism was at the height of its influence, and at its dictates industry and trade were left untouched by legislation—interference of any kind was deemed harmful, searching interference fatal. At the end state activity, in large part, is concerned with the regulation and control of industry—regulation that becomes more general, control that becomes more stringent with time. The fundamental change in point of view may be regarded, abstractly, as due to the political theories which replace individualism. Socialism which embraces such a multitude of diverse theories in politics is at least definite in placing the community before the individual. Liberalism has enunciated that the progress of the community must be fostered through the welfare of the individual. State interference has been demanded by both: it extends further and further with sureness that is absolute, with speed that varies according to the obstacles it meets. In the Old World obstacles are many and severe. Dense populations, fixity of long-continued conditions, the prejudice of the past, together constitute an inertia that is incalculable. On the other hand, the statesmen of Australasia have had no such difficulties to overcome. A civilized life of one hundred and twenty years has not developed like conditions. It is not to be wondered, then, that here legislation goes further along the path of the world trend and achieves ends whose attempts in another, older,

community would be deemed experimental in a wild degree. Success must lead to the adoption of like principles elsewhere, adapted, of course, to meet special needs and circumstances. This is true in one direction particularly.

Modern-day industry is all too familiar with unrest. The conflicting interests of employers and employees provide ceaseless opportunity for disputes, with their attendant evils—crippled production and lost trade, far-reaching poverty with its accompanying crime. The direction of state activity to the source of these miseries has always formed a complex problem in statesmanship. On one hand stand the operatives, the great component of a community upon whose standard of moral and physical well-being depends the life of the whole body. On the other stands the body of employers, of as vital importance in industry, whose untrammelled activity is a prime necessity if a people is to progress on its economical side. Outside a given community stand its neighbors, competition with whom is a factor that can never be neglected. How, then, is state authority to proceed?

The interference of the state in industrial unrest has been very gradual. At first no general lines of action were laid down. The state proceeded of necessity with the great caution; it played a negative part. Individual cases of dispute were at first allowed to settle themselves, when necessarily victory went to the stronger of the opposed forces. Both such struggles were so crippling to both sides that each perceived the advantage of speedy settlement, even at a loss, to either or both, of previously held advantages. Industrial arbitration first makes its appearance when the counsels of an outside, disinterested authority are heeded by the disputants. Under certain circumstances the state supersedes the private arbitrator, but its offices are only exercised when quarrels have arisen and after failure of other attempts at reconciliation.

A close analogy is here to be noted with the first activities of the state in reconciling the differences of individuals—the beginnings of legal systems. From the attempts of the state to reconcile industrial disputes as they arise, obedience to whose suggestions for pacification is optional, it is a long step to the erection of tribunals to which quarrels may be brought by the parties of their own free will, but whose settlement, once invoked, is compulsory. The pro-

vision of such tribunals is a great advance, but may be rendered useless by the refusal of one party to submit its case. Industrial arbitration reaches the final stage it has presented when, in overcoming this difficulty, it becomes compulsory. In this stage disputes *must* be submitted to state arbitrament; further, even before open conflict springs into life, likely causes of future difference may be submitted by one party alone, for adjustment. In both cases the decision of the tribunal is binding.

Such is compulsory industrial arbitration in theory. In practice it is confronted with difficulties. The reconciliation of the conflicting interests of employers and employees is ever a question of the nicest delicacy; it is hardly possible to conceive a case in which the terms of settlement will be mutually acceptable. One party must make a sacrifice; and the question of inducing that sacrifice gives rise to the greatest difficulty that confronts compulsory arbitration—the means to be adopted for the enforcement of its authority. With regard to employers the matter seems easier of solution. They are, in comparison with the working population, few in number and more likely to be possessed of property that may be penally distrained. But with employees the matter is more difficult. If an award be given against them, obedience in the last resort can only be enforced by personal dstraint. And the governmental body has yet to be discovered that would dare to seek enforcement of its dictates against a resisting community. Physically, obedience never could be enforced; it is only to be procured through moral suasion.

Compulsory arbitration, in this respect, stands on the same footing as the dispensing of state justice in its beginning, and must make good its position as the latter has done—by an educative process. Another difficulty is that which confronts all legislation for the amelioration of the working condition of the masses. Decrease of hours of labor, increase of wages means increased cost of production; and an advantage gained in the former recoils on the heads of the workers through the latter. Any action of the state to regulate directly the profits of capital and secure to the workers the benefit of bettered conditions will, it is said, lead to an evil great enough to prohibit the adoption of compulsory arbitration. This is advanced in the often used argument that capital will fly the country where the principles of compulsory arbitration are adopted.



That such difficulties as these are in great part academical, that they may be met in practice, a consideration of Australian legislation and its results will serve to show.

### *State Legislation*

Before 1890, no attempt had been made by the government of any colony to cope with labor troubles by means of legislation. All that had been done was that official approval had been given to certain voluntary boards of conciliation set up by the Newcastle coal owners and coal miners. But in that year the Commission on Strikes in New South Wales reported as follows: "No quarrel should be allowed to fester if either party be willing to accept a settlement by state tribunal. . . . The state has a right in the public interest to call upon all who are protected by the laws to conform to any provisions the law may establish for settling quarrels dangerous to the public peace."

On the whole, these voluntary boards had failed as they have failed in other parts of the world under similar conditions. It was in 1890 and the following years that over the whole of Australia (and New Zealand) it was seen that urgent action of a new kind was necessary. Strikes and lockouts were growing in numbers and in cost, and the pressure of public opinion and the establishment of optional conciliation boards were of no avail in stemming the tide.

The great maritime strike of 1890 involved the whole of the colonial sea trade in Australia and New Zealand. For the first time in this part of the world street disturbances occurred in all the colonial capitals—in some the military were called out to intimidate the strikers. Destruction of property was a common occurrence, and at the Newcastle coal pits and at the Broken Hill silver mines work was stopped by sympathetic lockouts. As a result the owners were unconditionally victorious, but at great cost, considerably over £1,000,000.

Closely following this came the shearers' strike of 1891, beginning in Queensland and involving 10,000 men—the cause the same as that of the maritime strike, the refusal of the employers to countenance unionism and its principles. Arson and violence became common and the whole pastoral trade was dislocated. A similar strike occurred two years later, affecting the banking crisis

of 1893, whose evil effects were long felt, and this had been preceded by another Broken Hill strike.

These strikes were those that had the most far-reaching effects, but in every trade was felt unrest, evidenced in strikes, petty and important.

Legislative action was taken by most of the colonies. Queensland contented herself with a mere abstract resolution as to the advisability of state interference, combined with an act which was practically a dead letter. The wages board system was afterwards adopted by an act of 1908. South Australia and Victoria each passed acts providing for compulsory arbitration under certain conditions, which however were easily evaded by those whose interest it was to do so. These two colonies then turned their attention to the perfecting of a system of wages boards.

But in New South Wales, despite the principles laid down by the Commission on Strikes, all that was done was the establishment of state conciliation boards with an appeal to a state arbitration court, this by an act of 1892. But these boards entirely failed in their purpose—there was no compulsion and employers merely refused to appear. The same defect was apparent in the conciliation act of 1899, and at last in December, 1901, was passed a compulsory arbitration act, founded mainly on the New Zealand act of a similar nature which had, since 1894, been doing good work. A commissioner was despatched to New Zealand by the New South Wales government with the object of finding out exactly the merits and demerits of the system of compulsory arbitration in existence there. His report was completely favorable. Compulsory arbitration had by actual experience been productive of good in the following ways:

(1) It had prevented strikes of any importance, and had conduced to better relations between employers and employed.

(2) It had enabled employers to know with certainty the conditions of production and so to fulfil contracts.

(3) It tended generally to a more harmonious feeling among the people.

In addition the adoption of compulsory arbitration had by no means the effect of decreasing the material welfare of the colony.

So it was definitely decided to introduce such a system into New

South Wales. The prosperity of the state, temporarily under a cloud, was reviving, and with this the number of labor conflicts was again beginning to grow.

Under the new act there was no provision for conciliation boards. The arbitration court was to do the whole work of the law. Briefly the provisions of this act, which was to last till 1908, were as follows:

The court was to be composed of a judge and two assessors, one representing the employers and the other the trade unionists. Provision was made for security of tenure. Industrial unions were made into corporations. Trade unions would be included in the awards whether they registered themselves under the act or not. Only trade unions could be registered under the act as industrial unions.

Strikes and lockouts were prohibited during the reference of a dispute to arbitration. Violation of this section was attended by fine up to £1,000, or imprisonment for two months. No worker, under penalty of £20, was to be dismissed from his employment on account of being a unionist. Power was specifically granted to fix a minimum wage, and the court could order preference to be given to unionists. Power was also given to the court to make a common rule, that is an award could be given *in rem* and applied to the whole industry throughout the state. Exceptions could be made to this rule for the sake of aged and infirm workers. Penalty for a breach of an award, by either an employer or a union, was £500. Agreements made between employers and unions by order of the court or not, were not to last longer than three years. Power was also given to the registrar of the industrial court to intervene in a dispute and make it the subject of an award, though neither of the parties invoked the aid of the court.

*Wages Boards.*—Sweating and similar industrial evils became very pronounced in the Australian colonies after 1890, when financial depression was universal. The efforts of the legislatures to cope with these by compulsory arbitration have already been noticed. But certain colonies preferred to deal with them by another method. This was by the establishment of wages boards. The principle of a fixed minimum wage had been adopted by the Victorian House of Representatives in 1893, and in 1896 the shops and factories act had

been passed. By this act special boards could be appointed to fix wages and piecework rates for all trades and for certain factories. These boards were to consist of members, between four and ten in number, representing equally the employers and the employed. In default of their election, the governor in council appointed them (always so appointed the board in the case of the furniture trade to exclude the risk of Chinese representatives). Not only could the boards fix the minimum wage, but could deal with such matters as hours, overtime and apprentices. Provision was made for aged workers to be excluded from determinations. Child and female labor was also regulated by this act.

In 1899 the governor in council was authorized to appoint a special board to fix the minimum wage in any industry, and this provision has been largely taken advantage of.

On the whole it may be said that the system of wages boards has worked well. The determination of a wages board could only be questioned in the Supreme Court and had practically the force of law. Compulsory arbitration seemed to be scarcely necessary. So well did the system work that, in 1900, South Australia adopted it from Victoria almost in toto, expressly authorizing special rates for infirm workers.

The wages boards deal with the subjects of most strikes—rates of pay and number of working hours, but they still leave the risk of labor disputes, and the functions of the various wages boards must remain narrower than those of an arbitration court. They do not make strikes or lockouts illegal, nor do they take special account of labor unions. In the system of wages boards, too, as seen in Victoria, the initiative, the enforcement and even the overruling of awards rest with the minister of labor, the only appeal from whom is to the government. This might perhaps seem to be too paternal to be of lasting good. The main advantage they possess is that by them industry can be regulated without the semblance of any dispute or ill feeling. Although trade deputations have waited on the government requesting the introduction into Parliament of an arbitration bill, the acts of 1905, amended 1907 and 1909, are still in force in Victoria, and in South Australia there seems to be no tendency to change this system, amended as it is by a series of acts to 1909.

*New South Wales Industrial Disputes Act, 1908.*—At the expiration, in 1908, of the arbitration act, the industrial disputes act was passed combining the leading features of the wages boards system and that of compulsory arbitration. The preamble of this act is of interest as showing how far public opinion had advanced since the tentative resolution of the Royal Commission in 1890. It runs as follows: "An act to provide for the constitution of boards to determine the conditions of employment in industries, to define the powers, jurisdiction and procedure of such boards, and to give effect to their awards, and to appoint a court to prohibit lockouts and strikes and to regulate employment in industries; to preserve certain awards, orders, directions and industrial agreements, and for purposes consequent thereon or incidental thereto." The act provides the most complete regulation of the matters likely to lead to labor problems of any passed within the commonwealth.

Provision is made for the appointment of a registrar, who may register under this act any bona fide trade union or branch. A refusal to so register is subject to an appeal to the industrial court. Industrial unions duly registered under the act of 1901 are saved. The cancelling of a registration shall not relieve the industrial union from any penalty incurred. Industrial agreements as made under the act of 1901 are to continue to be so made enforceable in the same way as an award of a board under this act.

The industrial court shall consist of a judge, with or without assessors, appointed for seven years.

The minister shall, on the recommendation of the industrial court, following on the application of a trade union, industrial union, employer of at least twenty workers, or any twenty employees, direct a board to be constituted. This may even be done on the recommendation of the industrial court alone without any application. Such a board consists of not more than four members equally representing employers and employed, and a chairman. The representatives of the employees must be bona fide workers, but this qualification is not insisted on in the cases of certain special industries. All members of the wages board are appointed for a term of two years by the governor on the recommendation of the industrial court, which also nominates the chairman if the parties can agree upon such. A penalty is provided for the non-fulfillment of his

duties by any member of a wages board. Upon his appointment each members takes an oath not to divulge trade secrets or financial situations which shall come under his notice. The constitution of a wages board cannot be challenged by a prohibition or otherwise.

Such boards have jurisdiction over disputes referred to them by the industrial court, by a trade or industrial union, by an employer of more than twenty workers, or by at least twenty operatives in any industry. Though the union is considered as the economic unit, yet the privileges of labor legislation are not confined to members of these alone. It is not obligatory by the act that preference should be granted to unionists. More particularly the matters dealt with by these boards concern wages, overtime, holidays, the limitation of apprentices, and special rates for old and infirm workers. The awards are to be for periods not exceeding three nor less than one year, and are considered binding on publication in the Government Gazette. The chairmen of the boards have the fullest powers of inspection as well of premises as of the books of any industry. They may dismiss any application as trivial if the facts so warrant. Appeal lies from the boards to the industrial court by leave of the latter. The minister of labor may bring an appeal from an award of a board or intervene during the course of a sitting if he thinks that public interests may be affected.

As to the enforcement of awards, the act provides: Any person working in an industry for which the wages have been fixed by a board, by an industrial agreement, or by the court, shall be paid in money the full amount due to him, and this may be recovered although there be an agreement to the contrary.

The instigation or taking part in a lockout or strike renders the offender liable to a £1,000 fine or two months imprisonment. If a person convicted under this section belongs to a union that union is liable to the extent of £20 unless all reasonable means have been used by it to prevent the offence. This term of imprisonment has been increased by an act of 1909 to a period of twelve months. By this act, passed during the course of the late Newcastle coal strike, in the face of strong and bitter opposition by the labor representatives in the New South Wales Parliament, such a term of imprisonment may be inflicted as the result of a trial before a judge alone.

There are other provisions in this act, too, which cause it to be

regarded with extreme dislike by the political labor party. Thus, if any sergeant of police believes that a building is being used for a meeting to instigate a strike or lockout, he may enter such building by force and seize documents suspected to relate to such contemplated strikes or lockouts. A meeting of two or more persons is declared unlawful when it assembles to instigate or direct a strike or lockout, when such is in respect of a necessary commodity, this latter is defined as including coal, gas, water and any article of food, deprivation of which may endanger human life. Persons taking part in such a meeting, where they believe that the probable result of a strike or lockout will be to deprive, to a degree, the supply of a necessary commodity, are liable to imprisonment for twelve months. The penalty for a contract or combination in restraint of trade is £500, while the penalty for monopoly or attempt at monopoly, with the intent to control the price or supply of a necessary commodity, is the same.

Returning to the act of 1908, the penalty for the breach of a wages board award or order of the court of arbitration (made under the 1901 act) is £50, while an employer is forbidden to dismiss an employee for being a member of a board or a trade union, or for being entitled to the benefit of an award, under a penalty of £20 for each employee so dismissed. Proceedings for such offences against the act are to be taken in the industrial court, the penalties attached to be recoverable in any court of summary jurisdiction. Any decision of the industrial court is final and cannot be challenged by any court of judicature. Provision is also made for the compulsory keeping by the employers of time sheets and pay sheets; for the appointment of inspectors under the act; for the taking of security for the due performance of an award; and for a continuance of the present conditions of labor during proceedings before a board.

In Western Australia, acts on similar lines to the New South Wales Act of 1901 were passed in 1902-9, but in these laws provision was made for the establishment of boards of conciliation. These latter do not work well and the tendency is to go direct to the arbitration court under the acts.

Thus in New South Wales and in Western Australia industrial arbitration has been relied on to obtain peaceful conditions; but in the former state a system of wages boards has been conjoined. In

Victoria, Queensland and South Australia the wages boards appear to be working well, as industries there show. In Tasmania no legislation on the subject has been attempted.

*Commonwealth Legislation*

With different systems of industrial arbitration prevailing in different states, it is evident that the terms of awards by the tribunals of one state may differ greatly from those of awards in relation to the same trades in another state. From this difference, the manufactures of one state would naturally enjoy an advantage over those of another, despite the tendency towards similar awards which was a result of the uniform customs tariff under which the states came in 1901. It was with a view to avert this possibility that the Arbitration Court of New South Wales, under the act of 1901, refused to raise the rate of wages in a certain trade above those awarded to the operatives in the same trade in Victoria. An attempt has been made to meet properly the lack of uniformity by a bill introduced into the federal parliament to provide for the establishment of an interstate commission—a permanent quasi-judicial body having for its object the settlement of matters of mutual interest to the states. In this proposed act provision is made for a federal court to adjust differences arising between the awards of the arbitration tribunals of the states. Pending the establishment of such a court as an adjunct of the interstate commission, the Commonwealth parliament can go no further than to provide a court for disputes extending beyond the limits of one state (constitution sec. 51, subsection xxxix). Under this authority were passed the Commonwealth Conciliation and Arbitration Act 1904, and the Amending Act 1909.

The objects of the main act as distinctly set forth are: to prevent strikes and lockouts; to constitute a federal court of arbitration with power to provide for the amicable settlement of disputes; and failing of such settlement to make an award; to make and enforce agreements between employers and employees; to enable states to refer to it; and to encourage organizations of employers and of employees, who may approach the court with disputes. It will be noted that the provisions of the chief federal act correspond to some extent with those of the New South Wales acts of 1902-9.



The federal court of arbitration established by the act consists of a president, who is to be a judge of the high court of Australia, who may appoint assessors and a deputy, if necessary. It is endowed with very large powers. Thus its decisions prevail over those of the state courts, which are also required to cease dealing with any dispute at its request. Its awards are not challengeable by any other court, though the president may state a case for the opinion of the high court. The jurisdiction of the court is very wide, extending to the settlement of all industrial disputes, these, of course, must reach beyond the limits of any one state to come within the jurisdiction of the court. But it is to be noted in this connection that the term "industry" is not to include agricultural, dairying and domestic pursuits. The jurisdiction extends to the reconciliation of disputes of which the court has not official cognizance. Reconciliation is to be affected by unofficial suggestions made by the court. If, as a result, settlements are come to, these if the court is satisfied have the force of an award, save as to continuance, as under the state system.

If the parties fail to adjust their differences, these may be settled by reference to the court. The court is to have cognizance of a dispute on the certificate of the registrar under the act, on submissions by an industrial organization or by a state. Reference of a dispute to the court by an organization without the approval of the president is not allowed unless the registrar certifies to the submission of the dispute by an organization, such submission being made by resolution of the members of the organization and given in writing. The court is to hear every dispute of which it has cognizance. After hearing, the court proceeds to make the award. These awards, which are to continue until altered, but in any case no longer than five years, are binding on the parties before the court, on all organizations of employers and employees which are declared to be bound by a "common rule," and, necessarily, on all the members of the organizations bound.

Organizations may enter into industrial agreements between themselves, which, subject to supervision by the court, may continue in existence for three years. These are only to affect the organizations concerned. They may be rescinded or varied by the parties, or by the order of the court in accordance with a common rule. These,

as is the case with awards made by the court, are to be filed at the registries, and are to constitute evidence of an award when sealed by the registrar.

Besides these powers the court has, in addition, certain special powers. In relation to its informal reconciliation of parties, the court may refer disputes to conciliation committees of employers and employees in equal number, to a local industrial board which may consist of a state industrial authority or a board constituted by the federal court for report. The court further has power to fix and impose penalties, to declare a "common rule," dismiss disputes dealt with by state authorities, to vary its orders, to declare a minimum wage, and order preference to be given to members of organizations by employers. Further features distinguish the federal arbitration court from other tribunals. Thus it is not to regard technicality, legal forms, or the rules of evidence; no party is to be represented before it by counsel save by the consent of all parties or of the president; it may vary its orders, or correct or waive any error.

The act forbids in express terms strikes or lockouts under a penalty of £1,000. Persons refusing to accept an award of the court are deemed guilty of striking and so brought within reach of this penalty, as are organizations directing their members to refuse an award. In proceedings for the recovery of this penalty, which can only be brought by the permission of the president, the onus of proof lies on the defendant.

The organizations are industrial unions created by the act, inasmuch as they alone can approach the court in reference to a dispute. To take advantage of this capacity the organizations have to fulfil various conditions. The most important of these are that organizations, whether of employers or of employees, must consist of 120 members; they must be registered; and their funds must not be used for political purposes. The political purposes for which such funds are not to be used are declared not to include the prosecution of such aims as the preservation of life, regulation of hours of labor and of rates of pay, and conditions of employment generally. Organizations are also endowed with the capacity of acquiring property, and of recovering fines and penalties under the act.

With respect to registration the act provides for the establishment of industrial registries, at which organizations may be regis-

tered and to which they must make returns of members, accounts, etc. Registration may be refused if there is already registered an organization on similar lines to the one making application. After being registered industrial unions may be struck off the lists by the court on its own initiative, or after hearing application by the registrar. Such application for cancellation of registration may be made on the grounds of an organization being wrongly registered, of its rules no longer complying with the provisions of the act, of its rules not making provision for the admission of new members or of its having neglected the orders of the court. Apart from the provisions for registration the governor general may proclaim organizations.

Due provision is made that the authority of the court shall be upheld. The court has the power to make orders for the observance of its awards, failure to comply with which involves liability to a penalty of £100, or to three months' imprisonment.

Penalties imposed by the court may be filed in the state courts by the registrar and they then take effect as judgments of the latter. Process may be issued against the property of an organization, and where this is insufficient to meet the penalty the members of the organization are liable. An organization committing a breach may be sued before the courts of summary jurisdiction, and the penalty is recoverable by the registrar or a member of such organization. A wilful default to observe an award by a member of an organization may be visited with a deprivation of rights under the act, with direction to cease being a member, and to lose rights of payments out of the funds of the organization.

### *Operation of the Industrial Arbitration Laws*

During the last decade Australia has enjoyed a far greater measure of industrial peace than the countries of the West. Without doubt the greatest factor in producing this result is her industrial legislation. This is not to say, however, that industrial disputes have ceased—such an end is as yet visionary; but the provision which has been made for the peaceful settlement of industrial differences has had its effect. Ability to have resort to such provision is preventive of strikes and lockouts in a measureless degree. Where such resort is made not only are incipient disputes nipped in the bud, but the ill-feeling consequent upon opposition is averted. These are

the lines on which industrial arbitration is leading industry in Australia—strikes are becoming of rare occurrence, and the interests of industrial units, formerly antagonistic, tend to a closer mutuality. It cannot be laid down that, during the period of the adoption of arbitration in Australia, a definite number of open quarrels were prevented. But indirectly the measure of industrial peace that has resulted may be gauged from the resort made to the provisions of the various statutes in that connection.

First, as regards wages boards: The wide use made of these institutions may be gathered from the following table, which, except in the case of Queensland, includes results to the end of 1908:<sup>1</sup>

	Total registered trades.	Trades under boards.	Employees under boards.	No. of determinations.
Victoria .....	162	59	88 per cent	49
Queensland <sup>2</sup> .....	56	29	..	23
South Australia <sup>3</sup> ..	74	24	62 per cent	20

Secondly, with regard to the Industrial Disputes Act of 1908, in New South Wales, embodying results from the inception of the act to the beginning of June, 1910:

Number of applications for boards .....	155
Number of boards appointed .....	139
Number of boards dissolved .....	26
Number of determinations:	
(a) Of boards .....	90
(b) Of boards re-enacting awards of court of arbitration ..	20
(c) Of boards varying or amending awards of boards..	42
Number of boards now sitting .....	17
Number of hearings not yet begun .....	10

Thirdly, with regard to the arbitration acts of New South Wales and Western Australia to end of 1908: In New South Wales, 86 agreements were registered under the act of 1901, affecting 38,000 employees. Here, too, 252 industrial disputes were filed; 130 awards were made and the remainder of the disputes were withdrawn or removed. Fifty-five awards have been made common rules.

In Western Australia, 54 industrial agreements were made up to

<sup>1</sup>From Official Year Book of Commonwealth, 1909.

<sup>2</sup>Metropolitan area only.

<sup>3</sup>As at 31st October, 1909.

the end of 1908, affecting 16,000 employees. Of industrial disputes, 252 were filed, in which 71 awards were made.

It can thus be seen, from the number of peaceful adjustments of differences that have been made, how very greatly the systems of arbitration in vogue in the different states make for industrial peace. The position of the operative has been improved beyond all measure throughout the centres of industry. It would be too lengthy a process to quote concrete instances of this betterment; it is sufficient to say that the aim of insuring to the worker a "living wage" has been, and is still being, maintained in Australia, together with the procuring of better conditions of labor.

Yet the question of securing industrial peace indirectly does not embrace the question as to whether industrial arbitration, in Australia, is really compulsory. From a survey of strikes which have occurred during the last ten years, there cannot be said to have been a struggle having for its vital issue the ability of a state authority absolutely to prohibit strikes and lockouts. The last strike in New South Wales, that of the Newcastle coal miners, which, regarded in a particular light, may have seemed a victory for the community, as opposed to a recalcitrant adversary, was really no more than an indication of the advance of the educative process by which the whole community will ultimately condemn striking. That there has been no struggle on the vital issue is due to the wise hesitation, conscious or unconscious, of those in authority to risk prematurely the whole compulsory arbitration movement.

In the meantime public opinion is growing, fostered in many ways. In the first place it has been made clear to every operative that better and more permanent conditions of labor can be obtained by a peaceful award than by a strike. The tribunals before which the disputes come can be relied on as being utterly impartial—they are either presided over by a judge or subject to judicial appeal.

Secondly, what is perhaps of most importance in this connection, the labor party in Australian politics exhibits great and increasing prominence. In some states labor ministries are in power,<sup>4</sup> while in the commonwealth parliament itself, as the result of the 1910 elections, the labor party has a sweeping majority in both the Senate and the House of Representatives. In states where non-labor min-

<sup>4</sup>As a result of the last elections, October, 1910, a labor ministry is now in power in New South Wales.

istries hold power, the labor minority is sufficiently strong to exercise a loud voice in public affairs. The members of these labor parties are tried upholders, where not actually members, of the very industrial unions encouraged by the various arbitration acts in Australia. And the presence of such men in the houses of legislatures, educated by the responsibility which devolves upon them as holders of office, or as members of an important party in opposition, is the strongest guarantee of industrial peace generally, and of the final enforcement of the prohibition of striking. In the late Newcastle coal dispute the weight of the labor members of parliament was against the strike; that the trouble did not extend to other industries was due to the exertions of members of the political labor party. It is true that the representatives of labor in the New South Wales parliament bitterly opposed the Industrial Disputes Amendment Act of 1909. It is true that they have the repeal of this act in their platform for the forthcoming state elections. But it is also true that they attack it because of the large amount of discretionary authority it leaves in the hands of subordinate police officers; and because it derogates from the system of trial by jury. There is no reason to suppose that the aspect of the New South Wales labor party on the question of the coercion act indicates any tendency towards retrogression as regards the prohibition of striking. The danger that may seem to work upon the rise into power of labor majorities in the legislatures—that they may become the creatures of the electoral majority—has not yet shown itself insofar as experience goes. Nothing but good, so far at least as compulsory arbitration is concerned, would seem to be likely from increased labor prominence in politics.

So the education of public opinion proceeds. Considering the industrial peace of the last ten to fifteen years, and the present outlook, its progress has been rapid indeed. It is not altogether vain to visualize the day when compulsory arbitration shall have proved its name.

Considering the objection to industrial arbitration that improved conditions of labor increase the cost of living, the attempts made to insure that the position of the worker shall not be prejudiced through the latter are worthy of note. In some of the arbitration acts and in the Commonwealth Anti-Trust Act provision is made for the preven-

tion of "combinations in restraint of trade"—an indirect attempt to decrease the profits of capital. A direct attempt at the same end was made in the Commonwealth Excise Tariff Act, 1906. By this act an excise duty of one-half the duty payable on imported agricultural machinery was imposed upon similar machinery manufactured in Australia. But it was provided that the latter should be exempted from excise if manufactured under conditions in accordance with an award under the Commonwealth Conciliation and Arbitration Act, 1904. By the Customs Tariff, 1906, a maximum price at which such manufactured machinery should be sold was fixed, with a proviso that if sold at a higher rate the commonwealth executive should have power, by reducing customs duties, to withdraw the tariff protection. These acts together embrace what is known as the "New Protection," but their provision has been declared invalid by the High Court of Australia. It is worthy of note that there is a possibility of a referendum being taken with regard to the amendment of the constitution of the commonwealth to render the new protection operative.

There is not the slightest cause for doubt on the question of capital having been diverted from Australia on account of the adoption of compulsory arbitration. Industrial peace is a stronger magnet than the results of "*Laissez faire*," as investments in Australian ventures show.

### *Conclusion*

On the whole compulsory arbitration in Australia has been an undoubted success in so far as results can be judged during the comparatively short time the system has been in operation. In New Zealand, where it has been in vogue longer than anywhere else, the success has been unqualified. True the strength of the system has never been tested. There has been no decisive struggle between masters and men. But the absence of such a struggle is in itself a sign of efficiency, and of the satisfaction given to both the factors in industrial prosperity.

In New South Wales and the other states of Australia strikes have not been prevented, but certainly their number has been diminished, and, most important of all, the condition of the workers has been improved. This improvement continues, and with it it is

certain that arbitration as a part of daily life will grow to be more and more an accepted fact in the minds of the community.

Of course the reason for this success may lie in the fact that, in Australia, industry is centralized. It is notable that the conditions of agricultural laborers are the only ones that the commonwealth act does not profess to touch; and it is in the ranks of these workers that sweating and similar evils exist to a large extent. It has been found extremely difficult to get anything like a uniform rate of wage and number of hours of employment suitable for this class.

There can be no doubt that compulsory arbitration with its concomitant awards rests on a sound basis. It is the business of law in every department of life to see that reasonable expectation is fulfilled. The employer has the right to expect that the conditions under which he contracts are likely to have some continuance; just as the employee has the right to expect that the conditions under the expectations of which he makes out his scheme of life will have some degree of permanence. That the legislature in providing means for the satisfaction of each of these reasonable expectations is going beyond its sphere of action will hardly be maintained by the most ardent opponent of state interference.





## BOOK DEPARTMENT

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### NOTES

**Alvarez, A.** *American Problems in International Law.* Pp. vi, 102. Price, \$1.00. New York: Baker, Voorhis & Co., 1909.

In this little book, Dr. Alvarez has given an interesting historical résumé of the various international law questions which have concerned the American continent. He makes this study the basis for the formulation of the principles which have governed the states of America in their international relations, and reaches the conclusion that the American hemisphere has certain factors peculiar to itself, which have given rise to distinct views on questions of international law; in other words, that there is an American international law, or certain principles which are recognized by the states of America in their dealings with one another. In their relations with Europe, the states of America have attempted to maintain certain of these principles. This interesting thesis is treated in a scholarly manner. The notes are full and instructive; the arrangement and table of contents make up for the lack of an index.

*American Railway Association, Proceedings of the, 1907-1909.* Volume V. Pp. xli, 1073. New York: American Railway Association.

*Bibliography of Economics for 1909.* Pp. xiii, 282. Price, \$2.50. Chicago: University of Chicago Press, 1910.

This is a cumulation of bibliography appearing in the "Journal of Political Economy" from February, 1909, to January, 1910, inclusive. Those familiar with the bibliographic feature of the "Journal of Political Economy" will need no commendation of this book. Its 7,000 to 7,500 entries include most of the economic titles of permanent value issued in 1909. Exceptions are the publications of the various states of the Union, and many labor union, trade and technical journals. The compilation and indexing of the book is excellently done.

**Brace, H. H.** *Gold Production and Future Prices.* Pp. viii, 145. Price, \$1.50. New York: Bankers Publishing Company, 1910.

**Bruce, P. A.** *The Institutional History of Virginia in the Seventeenth Century.* 2 vols. Pp. xix, 1904. Price, \$6.00. New York: G. P. Putnam's Sons, 1910.

**Cunningham, W.** *Christianity and Social Questions.* Pp. xv, 232. Price, 75 cents. New York: Charles Scribner's Sons, 1910.

In this volume the author has attempted to indicate the relation which should be maintained between Christianity and economic and social problems. To prove his point, he has covered almost the entire field of science, beginning with the physical conditions of life among animals and men, race differentia-

tions and the enforcement of civil authority, continuing with a discussion of the functions of government, the rewards of service and the chief fallacies in economic doctrines, and concluding with a strong plea for the development of Christian character through some form of secularized or applied Christianity. In the course of such a broad survey it is inevitable that the author should misstate some of the modern scientific concepts. To the student of race problems, for example, his discussion of superior and inferior races clearly fails to express the modern view regarding race characteristics and policies. So to the economist the statement of the Malthusian doctrines and of the principal fallacies underlying political economy in general is interesting, if not accurate. The purpose of the book is good, its moral is excellent, but in its execution the author has erred by seeking to include more than can normally be included within the scope of a single volume.

**Davis, W. S.** *The Influence of Wealth in Imperial Rome.* Pp. xi, 340. Price, \$2.00. New York: Macmillan Company, 1910.

**Dryden, J. F.** *Addresses and Papers on Life Insurance and Other Subjects.* Pp. 330. Newark: Prudential Insurance Company of America, 1909.

**Eaves, Lucile.** *A History of California Labor Legislation.* Pp. xiv, 461. Berkeley, Cal.: University Press, 1910.

The author of this volume has compressed into some 400 pages a record of the labor movement of California from its inception to the present time. In a prefatory chapter, "for the purpose of giving an understanding of the social forces back of the labor legislation," the history of the labor movement in San Francisco is traced. Then the slavery question as incident to labor in California, is treated. This is followed by a history of legislation relative to the regulation and later exclusion of the Chinese, 1852-1906; the length of the work day; the protection of wages; the relation between employer and employee; the labor of women and children; the protection of the life and health of the worker; Sunday laws; employment agencies, and the regulation of convict labor. The work of the State Bureau of Statistics and the State Board of Arbitration is discussed and the part played by the union label, the boycott, and the injunction in unionism is also considered.

The author maintains that the chief objects of labor legislation in California have been the prevention of race associations objectionable to the working classes, protection from cheap competition, wholesome conditions and decent hours of labor, security for payment of what is justly due, and the right to promote the interests of the working classes.

**Eliot, C. W.** *The Future of Trade-Unionism and Capitalism in a Democracy.* Pp. v, 128. Price, \$1.00. New York: G. P. Putnam's Sons, 1910.

This little book is composed of two lectures with the above titles delivered last year at Kenyon College by the former president of Harvard. The book partakes of the nature of prophecy, since it aims to show what changes must be made in both trade-unionism and capitalism before either is in complete harmony with the democratic ideal pictured by the author. On the whole,

his arraignment of modern unionism suggests a viewpoint rather unsympathetic to labor. His remedy for the present unsatisfactory labor conditions is academic in its adherence to the possibility of restoring competition as a regulator of many, if not all, industrial ills. His program of restoring competition is to be furthered by a policy of publicity in all matters affecting either trade unions or manufacturers' associations. "The duty of capital to resist the monopolistic features of trades-unionism assumes that trades-unionism no longer needs to resort to strikes, attacks on non-union men, boycotts and union labels in order to obtain fair wages, reasonable hours of labor, and the wholesomeness of the places where work is done. Publicity will accomplish these and all other reasonable ends which trade-unions have proposed for themselves."

The treatment of the future of capitalism in a democracy suggests the reign of a benevolent despot. "When the capitalist class as a whole is strongly influenced by the desire to promote the real welfare and happiness of the workmen they employ, they will invariably take thought for the means of providing their workmen with permanent homes which are not only wholesome, but cheerful, and suitable for the bringing up of a family." The lectures are interesting and the style easy, though one feels in places that they lack the ring that comes with contact with men rather than books.

*Everyday Ethics*. Pp. 150. Price, \$1.25. New Haven: Yale University Press, 1910.

"Everyday Ethics" is a second collection of addresses delivered in the Page Lecture Course before the Sheffield Scientific School of Yale University. It treats of certain problems of modern business life such as transportation, speculation, journalism, accountancy, law practice in their ethical aspects. The ethics of to-day or rather the "ethical values" here presented are not, however, deduced from the usual *a priori* premises. The authors are high-grade experts, intimately acquainted with the technique of modern industry, rather than moralists. They accordingly maintain that the moral principles in business are largely the logical, natural and inevitable parts of the industrial organism itself. To do away with these "practices" the entire industrial institution in question would have to be abolished. The conception that industry is an organism does not lead necessarily to the justification of every kind of "practice." On the contrary, it enables its advocates to separate "the roses from the thorns" and to suggest improvements which, if in the line of organic continuation and development, can be easily executed and therefore of permanent value.

The addresses have been primarily intended for young business men: yet the wide scope they cover and the particular information they contain make them of interest to a student of social psychology and ethics. The value of the book is increased by a carefully prepared index.

**Fess, S. D.** *The History of Political Theory and Party Organization in the United States*. Pp. 451. Price, \$1.50. Boston: Ginn & Co., 1910.

Dr. Fess has attempted to give us a work of which we stand in great need,—a study of the effect of political theory upon actual politics. For the general

reader who has not studied civil government and whose United States history is confined to a high school course, the book furnishes the sort of supplement adapted to the small amount of time he can devote to the subject. The earlier chapters are well written and deserve the attention of students whose interest is more thoroughgoing. There is a good appreciation of Jefferson, and a better one of Hamilton, though his monarchical tendencies are minimized. The estimate of Marshall is the best chapter of the book. After the early period the discussions are not so satisfactory, due to an attempt to do too much in small space. Political developments are traced chronologically and at the same time an effort is made to give brief biographies of the chief characters and to bring together the thread of the theories they advocate. Such a method necessitates many repetitions and criss-crossings which leave the reader confused. Some of the subjects, in spite of the manner of treatment, are presented with tolerable clearness, notably the breakdown of the legislative caucus and the rise of the convention. In most cases the result is choppy.

The weakest point of the book, especially if it is to be used as a text, is the total lack of aids to further investigation. A text is more a series of guide posts than the journey's end, and the omission of all references to collateral reading and all citations even to the great cases which are landmarks in our constitutional history is decidedly disappointing. In spite of these serious defects of omission and arrangement, the book is a step in the right direction. There is no great importance in a theory which is unrelated to practice, and Dr. Fess has done a service in emphasizing the extent to which the relation has existed in the history of the United States.

**Frankel, L. K., and Dawson, M. M.** *Workingmen's Insurance in Europe*.

Pp. xviii, 477. Price, \$2.50. New York: Charities Publication Committee, 1910.

Whether or not the uncertainties of life have increased with modern industry, it is unquestionably true that there was never a time when more attention was paid to the elimination of industrial uncertainty than to-day. In 1908 the Russell Sage Foundation authorized the authors to investigate workingmen's insurance in Europe, and the results of this investigation have amply justified whatever appropriation was made for the purpose. The authors have divided the problem into insurance against industrial accidents, against sickness and death, against invalidity and old age, and against unemployment. This series of specific insurance problems is followed by a discussion of complete insurance systems. In each case the general theory underlying the problem is stated, and the most important European laws discussed. It is made apparent, first, that the progressive countries of Europe have taken many important steps toward guaranteeing the certainty of the working life, and second, that unless some similar steps are taken, the United States may look forward in the not far distant future to a serious curtailment of labor efficiency.

**Frazer, J. G.** *Totemism and Exogamy*. 4 vols. Pp. xxxiii, 2181. Price, \$16.00. New York: Macmillan Company, 1910.

**Gephart, W. F.** *Transportation and Industrial Development in the Middle West*. Pp. 273. Price, \$2.00. New York: Longmans, Green & Co., 1909. This volume is evidently the result of painstaking research. The material presented is systematically arranged. The author's style is easy and direct. The purpose of the book is "to correlate the development in transportation with the industrial development" of Ohio. The volume begins with an account of primitive routes of travel and trade and then considers in turn the settlement of the state, early roads, water transportation and industrial development down to 1830. The latter half of the book deals with the construction of highways, railroads and interurban railways; with the improvement of the Ohio, and the construction of harbors on Lake Erie; and with the industrial progress made by the state from 1830 to 1900. The text is illustrated by several maps and diagrams. There is a good bibliography at the end of the book. In some instances the discussion has to do with a larger section of the country than the State of Ohio; but that is the exception rather than the rule, and it would have been more accurate to have used "Ohio" instead of "The Middle West" in the title of the volume. The author correctly considers Ohio typical of the Middle West, but it is hardly synonymous therewith.

**Gompers, S.** *Labor in Europe and America*. Pp. xi, 287. Price, \$2.50. New York: Harper & Brothers, 1910.

The American Federation of Labor sent its president, Mr. Samuel Gompers, on a tour of inspection of European trade unions. This book is an interesting, well written, but somewhat superficial, account of European conditions as seen by the author. Throughout Mr. Gompers reveals the typically self-satisfied American. European conditions are described at their worst, while in contrast, American conditions are painted at their best. The book purports to show that the working man in America is infinitely better cared for than the working man in most of the countries of Europe. While the statement may be true, it is certainly unjustified by the facts which Mr. Gompers adduces in its support. It is fair to describe this book as a pleasant narrative of travel, bitterly anti-socialistic in tone, avowedly favoring the American trade union methods and conditions, and written from a distinctly biased viewpoint.

**Hill, R. T.** *The Public Domain and Democracy*. Pp. 240. Price, \$2.00. New York: Longmans, Green & Co., 1910.

**Jessup, H. H.** *Fifty-three Years in Syria*. 2 vols. Pp. 382. Price, \$5.00. New York: F. H. Revell Company, 1910.

**Johnston, H. H.** *The Negro in the New World*. Pp. xxix, 499. Price, \$6.00. New York: Macmillan Company, 1910.

**Joyce, H. C.** *The Law of Intoxicating Liquors*. Pp. cx, 840. Price, \$7.50. Albany: Matthew Bender & Co., 1910.

Few subjects are of such general and far-reaching importance from a social and legal standpoint as the regulation of the manufacture and sale of intoxi-

cants. The author aims to expound the law without discussing causes, tendencies or effects. The presentation of authorities is exhaustive and gives a clear idea of what the law is at the present time. The constitutional limitations are well discussed and the various forms of legislative control are reviewed in detail. The discussion of the effect of the Wilson act upon state legislation is especially well brought out and a review of the various methods of controlling the granting of licenses and of the rights acquired under them presents the latest legislative expedients which have been applied under the vague extra constitutional development called the police power.

**Kelly, E.** *Twentieth Century Socialism*. Pp. xix, 446. Price, \$1.75. New York: Longmans, Green & Co., 1910.

This volume, left practically complete at the death of Mr. Kelly, and subsequently edited by Mrs. Florence Kelley and the author's son, Shaun Kelly, is a discussion of the more elementary phases of socialism from the standpoint of a late convert.

In Part I the author shows that socialism is not anarchism or communism, and that it will not suppress competition, destroy the home, abolish property or impair liberty. Part II is given over to a condemnation of capitalism, the author contending that it is anarchistic, wasteful and disorderly, and the direct cause of overproduction, unemployment, prostitution, labor troubles and adulteration. The closing chapters of the book are devoted to an enumeration and discussion of the possible benefits to be derived from the existence of a socialistic régime.

The volume has all the earmarks of having been written by a person new to the subject, unacquainted with its literature and ignorant of the finer, more important points of its philosophy. The only redeeming features of the book are the enthusiasm and sincerity of the author and the lucidity of his style.

**Leupp, F. E.** *The Indian and His Problems*. Pp. xiv, 369. Price, \$2.00. New York: Charles Scribner's Sons, 1910.

A trained correspondent, for twenty-five years in personal contact with the Indians, for nearly five years commissioner of Indian affairs, Mr. Leupp was unusually qualified to tell Americans about the Indians. The volume stands in a class quite by itself. It is not a study in ethnology and its chief quality is the sympathetic appreciation of the Indian's humanity. It is the simple story of the Indian and his relation to the government and should be widely read.

The Indian is a man. Treat him, then, as a man. Do not pauperize him, do not take away all incentive for effort. Recognize that conditions vary from tribe to tribe, man to man. Extend a helping and protecting hand until it is clear that he can stand alone. Then make him stand, letting him learn by experience life's lessons. Even let him pay taxes and thus become as one of the rest of us. There is little race prejudice towards the Indian, so that amalgamation is sure to come. The problem is therefore executive. Private agencies should co-operate, not spend most of their time in criticism. Educate the children near their homes and in the things necessary to their future success.

In most interesting fashion we are shown the various policies of the government and the difficulties encountered by the officials. Altogether an unusual book to be highly commended.

**Luffmann, C. B.** *Quiet Days in Spain.* Pp. xii, 318. Price, \$2.00. New York: E. P. Dutton & Co., 1910.

Unlike most books on Spain this is not written by a traveler or a sojourner of a few months. Mr. Luffmann has the unusual advantage of having lived not simply among but with the Spanish. He knows their daily life, their characteristic contradictions in character. Few other writers have succeeded so well in portraying Spain of the present day. There is no attempt to picture the past glories of the country in world affairs, in learning, or in art, but a successful effort is made to portray the life seen in the third class railway coach, the small towns, and the wine plantations. Most of the book describes the provinces of the southeast. Among the points of usual interest to the tourist, most emphasis is laid on Granada, Seville and Leon. The capitol and Cadiz are not touched and one can but feel that Barcelona, in many respects the most interesting town of Spain from the human side, is neglected.

**McCrea, R. C.** *The Humane Movement.* Pp. vii, 444. Price, \$2.00. New York: Columbia University Press, 1910.

**Mozaus, H. J.** *Up the Orinoco and Down the Magdalena.* Pp. xiii, 439. Price, \$3.00. New York: Appleton & Co., 1910.

Most of us feel that the days of adventure are past and that there is little left to discover. Dr. Mozaus' narrative reaches vast regions still practically untouched by the white man and of almost inestimable possibilities for future development. The author is a globe trotter who felt that he had almost exhausted the pleasures of travel, but found himself in a region full of varied experiences. The narrative is easy and at times thrilling. The style tends frequently to become profuse and the title, especially for the first hundred pages, has little reference to the subject matter. One of the best characteristics of the book is the historical touch given in every chapter. The author is familiar with many half-forgotten histories of the conquistadores which give his story the flavor of the original conquest.

**Nogaro, B., and Moye, M.** *Les Régimes Douaniers.* Price, 2.50 fr. Paris: Armand Colin.

**Ostrogorski, M.** *Democracy and the Party System.* Pp. viii, 469. Price, \$1.75. New York: Macmillan Company, 1910.

Shortly after the appearance of his work on "Democracy and the Organization of Political Parties," Mr. Ostrogorski was requested to publish separately the portion treating of the United States. This work is an abridgment of that material with additions which bring the work down to date. A new chapter is inserted, showing the extent to which the legislative caucus still continued to be a factor in party government in America, even when its nominating functions were taken over by the convention.



The style of the present work is to be commended. In the condensation much of the repetition which marred the larger work is avoided. It must be admitted, however, that the short chapters treating the development of legalization of parties, especially the primary election laws, are inadequate. There are some curious estimates of present political movements. The position assigned to Mr. Hearst as a political prophet is extraordinary. The proposals for reform are many of them unique but hardly practical. In the senate associate senators are to work with those regularly elected, and a non-partisan system of elections to all offices is advocated. Some of the suggestions are already a part of the political system in some of our states. The short ballot, the recall, proportional representation, preferential voting, and the initiative and referendum, receive commendation.

There is probably no better short account of the convention system, but the later political developments receive inadequate treatment, a fact which limits the availability of the work for use as a text.

**Paltsits, V. H.** (Ed.). *Minutes of the Commissioners for Detecting and Defeating Conspiracies in the State of New York*. Volume III. Pp. 268. Albany: State of New York, 1910.

An excellent analytical index of persons, places and subjects referred to in the previous two volume text on the attempts to control toriyism in New York during the Revolution.

**Quaife, M. M.** (Ed.). *The Diary of James K. Polk*. 4 vols. Pp. xxxii, 1962. Price, \$20.00. Chicago: A. C. McClurg & Co., 1910.

**Redway, J. W.** *All Around Asia*. Pp. xiv, 313. Price, 60 cents. New York: Charles Scribner's Sons, 1910.

As the title indicates, this little volume is a reader designed to supplement the study of Asia as it is presented in the usual text-books of geography. Like all carefully prepared books of this sort it is interesting reading even to one already familiar with the essential facts presented. The journey all around Asia is as comprehensive as the title suggests, though about half the space is devoted to China and Japan, with Asiatic Russia and India decidedly subordinated. This division of space, while open to criticism on some grounds, is perhaps justifiable on the ground of greater immediate interest in China and Japan.

There is little reason for criticism of the material presented. Much of it is hardly geography, but the author frankly admits this fact at the outset. His object apparently has been to present for young readers an interesting account of the essential things concerning Asiatic countries and their people. In this he has succeeded fully as well as anyone else who has attempted a similar task in this field.

**Richards, Ellen H.** *Euthenics*. Pp. xii, 162. Price, \$1.00. Boston: Whitcomb & Barrows, 1910.

For a generation we have been seeing more clearly the truth that poverty and disease are largely preventable. The little book by Mrs. Richards is a

popular treatise based upon the scientific literature of the day, setting forth a "plea for better living conditions as the first step toward higher human efficiency." Euthenics deals with race improvement through environment. The author maintains that while Eugenics is important, Euthenics is a more fundamental factor in securing race progress.

**Shaw, G. B.** *Socialism and Superior Brains.* Pp. 59. Price, 75 cents. New York: John Lane Company, 1910.

This is a little essay prompted by a so-called attack in "The Times" by Mr. W. H. Mallock on Mr. Keir Hardie in which the former accuses the latter of ignorance of political economy. The point at issue between the two lies in the right of the laboring class to share in the remarkable increase in the national income of England. Mr. Mallock's contention is that this increase has been produced by the exceptional ability of the employers and inventors and that therefore there is no reason to claim any share of it for the employee class. Mr. Shaw comes to the defense of Mr. Keir Hardie, at the same time attacking the position of Mr. Mallock. The author contends that the great advance in the world's progress has been rather due to a class of persons, inventors, discoverers and the like, who have proverbially died poor and that the stock dividends are going to a quite different class of persons. He, moreover, contends that even were Mr. Mallock's contention true, it is a false social ideal to endeavor to guarantee to superior brains all the benefits that may flow from their efforts. An author is granted a copyright for a limited number of years only. Likewise the patent of the inventor is limited. After a time their work is common property—part of the social heritage of the race and, contends Mr. Shaw, this is as it should be.

The book is forceful and if not convincing at every point, at least interesting and rather stimulating.

**Snedden, D.** *The Problem of Vocational Training.* Price, 35 cents. Boston: Houghton, Mifflin Company, 1910.

**Solar, Domingo A.** *Las Encomiendas de Indígenas.* Volume II. Pp. viii, 272. Santiago de Chile: Imprenta Cervantes, 1910.

**Surface, G. T.** *The Story of Sugar.* Pp. xiii, 238. Price, \$1.00. New York: D. Appleton & Co., 1910.

**Taft, William H.** *Presidential Addresses and State Papers of.* Pp. xii, 612. Price, \$1.80. New York: Doubleday, Page & Co., 1910.

This volume contains seventy-one speeches and addresses by President Taft, beginning with the Speech of Acceptance at Cincinnati, Ohio, on July 28, 1908, down to and including his speech on "Governmental Expenses and Economics," Newark, N. J., February 23, 1910. These speeches cover a wide range of subjects,—political, religious, biographical and economic. They contain much valuable information which is readily accessible by means of an admirable index to the volume.

**Thum, W.** *A Forward Step.* Pp. vi, 235. Price, \$1.50. Boston: Twentieth Century Company, 1910.

A high school education for the many and not for the few alone; self-sup-

port for such students, in the form of half-time employment either on public works or in industry under private management; tuition charges, paid by the pupils, to meet the operating expenses of the schools after their erection and equipment by the public,—this is the program set forth by the author as the next “forward step” for the “democracy of to-morrow.”

While one can hardly agree with all the details of the scheme proposed, yet the soundness of his contention can hardly be questioned, that if “we are to have any further progress, except in a slow, laborious and wasteful way, every young person with sufficient capacity should be given an opportunity to obtain a secondary education.” What the nature of that education should be, and whether the present secondary school curriculum meets the social need, the author does not discuss.

**Van Hise, C. R.** *The Conservation of Natural Resources.* Pp. xiv, 413. Price, \$2.00. New York: Macmillan Company, 1910.

**Viallate, A.** *La Vie Politique dans les Deux Mondes.* Pp. 616. Paris: Felix Alcan, 1910.

Reviews of the national developments of various countries are apt to be superficial, but such a charge cannot be made against this the third volume reviewing political developments, which is brought out under the supervision of Mr. Achille Viallate of the School of Political Sciences, Paris.

Judging from the discussion of affairs in the United States there is displayed a peculiarly thorough grasp of current political developments. Supplementing our monthly reviews a work of this sort is especially valuable in outlining the progress of events both international and municipal. The authors treating the various subjects are scholars of wide reputation and the summaries given are clear though brief. Unfortunately for Americans, public opinion seems not as yet to have developed to the point where the financial return makes a review of this character possible in this country.

**Watson, D. K.** *The Constitution of the United States.* 2 vols. Pp. xlii, 1959. Price, \$12.00. Chicago: Callaghan Company, 1910.

**Wilbur, Mary A.** *Every-Day Business for Women.* Pp. xiii, 276. Price \$1.25. Boston: Houghton, Mifflin Company, 1910.

The increased development and specialization of the factory system is requiring women to take an ever-increasing share in work outside of the home, and to specialize more and more their work within the home. The desirability of system in business affairs has been generally recognized, but until recently no effort has been made to systematize domestic economy. In order to better fit women to maintain their place efficiently in the world, it is necessary, first, that they should recognize their responsibility, and, second, that they should understand the fundamentals of business. The author has made an elementary though able, attempt to further this end.

**Wilcox, D. F.** *Great Cities in America.* Pp. xi, 426. Price, \$1.25. New York: Macmillan Company, 1910.

## REVIEWS

**Balch, Emily G.** *Our Slavic Fellow Citizens.* Pp. xx, 536. Price, \$2.50. New York: Charities Publication Committee, 1910.

For many years the author has been studying the Slavs in their home country as well as in America. Much of the material in this volume was published in "Charities and the Commons," four years ago. Hitherto little has been done to introduce the Slavs to Americans save by Dr. E. A. Steiner. Speaking various unknown tongues, coming only yesterday, settling in colonies, they have remained almost unknown. There was an excellent opportunity for such a study and it is a poor compliment to our appreciation of social questions that for several years the publishers looked askance at the manuscript on the ground that the public cared nothing about the Slavs and would not buy.

The work is excellently done. The first part describes the Slavic immigration at its source and gives an account of the home life and conditions of the various groups. Here, too, attention is called to the marked influence America is having on European conditions through the returning emigrants. In the second part the history of the Slav immigration is treated and their economic and social life in America is described. At the end of the book are some fifty pages of appendices of data together with a bibliography and index.

The volume contains many good illustrations. Altogether it is one of the most sympathetic and interesting studies of the immigrant the reviewer knows, and it is heartily commended to all who wish to know more of the stranger within the gates.

CARL KELSEY.

*University of Pennsylvania.*

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**Eastman, Crystal.** *Work Accidents and the Law.* Pp. xvi, 345. Price, \$1.50. New York: Charities Publication Committee, 1910.

Investigations in various social fields are continually emphasizing the need of more specific data bearing on social conditions. No recent investigation has done more to emphasize this need than that conducted by Miss Eastman into the causes and results of industrial accidents in Allegheny County (Pittsburg).

Taking the accidents of one year, Miss Eastman has prepared a careful summary, first, of their causes, and secondly, of their economic cost. Neither the employee nor the employer can be blamed for all the accidents. Defective machinery or the absence of safety appliances may often be responsible for some of the accident cost, but on the other hand, the reckless handling of even the most carefully constructed machines results disastrously to the worker.

The real value of Miss Eastman's study appears in her analysis of the social cost of work accidents. Her statements regarding the income loss are

most instructive, showing conclusively that the employer does not in any way bear the loss of industrial accidents, but that the loss is borne first, by the worker in loss of wages, second, by the home in the loss of its economic support, and third, by the community in that it is forced to maintain the injured workingmen or their families. To this statement of the problem of work accidents, as it appears in the abstract, the author has appended an excellent summary of the employer's liability, with a discussion of the law and the possibilities of liability legislation. Few more effective studies of social problems have appeared in recent years than the accident study which Miss Eastman has made and presented so effectively.

SCOTT NEARING.

*University of Pennsylvania.*

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**Gregory, H. E., Keller, A. G., and Bishop, A. L.** *Physical and Commercial Geography*. Pp. viii, 469. Price, \$3.00. Boston: Ginn & Co., 1910.

The authors have adopted a three-fold division of the subject: Part I, The Natural Environment; Part II, The Relation of Man to Natural Conditions; and Part III, Geography of Trade. The triple authorship corresponds to these three parts. In the book as a whole there is much to commend, while in individual respects there are many defects.

Part I, The Natural Environment, sets forth in 120 pages, the salient features of physical geography—such as, ocean, coast line and harbors, topographic forms, soil, waters of the land, atmosphere and climate. The limitations of space render it impossible for this part to stand in any way as an adequate substitute for the usual text on physical geography. It is simply an introductory section to the two which follow. In any circumstance, however, it is difficult to see the reason for giving to sand dunes half as much space as is accorded to plateaus. It is also somewhat surprising to find valleys considered as a topographic form; to find a discussion of the growing season and types of rainfall in the United States under topography instead of under the atmosphere and climate; while one is led to question sharply restriction of the term *alluvial plain* to cover only *alluvial fans* and *cones*.

Part II, which covers about the same amount of space, is devoted to two main topics: (1) Human adaptation and the effect of environmental influences; and (2) the development of trade, under the headings, agents of trade, trade routes, historical sketches and trade manipulation. This part is the best portion of the book. In many respects it is a real contribution to the field of geographic texts, since it unites in clear, concise form many of the most fundamental principles of human geography. The only real criticism which can be raised, against Part II is the fact that however important the question of trade manipulation may be to the understanding of *commerce*, it is, as discussed here, hardly to be considered as geography.

Part III is the unfortunate part of the book, for in spite of being accorded approximately one-half the total space, it falls distinctly below

the standard of the first two parts. Part III is devoted to a discussion of the three leading commercial nations; one hundred pages to the United States; fifty-eight pages to the British Empire; and eleven pages to the German Empire. Under the British Empire, India, with a trade equal to Canada and Australia combined, is accorded less space than either of the latter countries.

The German Empire, the commercial rival of the United Kingdom, has no more space than either Canada or Australia, while three out of the eleven pages on Germany are devoted to a discussion of rye and sugar beets. From the standpoint of German agriculture these two crops are admittedly important, but they are comparatively unimportant in Germany's commerce. These points give an idea of the shortcomings of Part III. In addition there are frequent inaccuracies of statement and sins of omission, among which may be mentioned: the statement (p. 316) to the effect that the Southern cotton mills in the United States produce the finer goods; no mention of any centers of the cotton textile industry; and the statement (p. 309) that there has been no "serious absolute decline in production" of petroleum from the Appalachian field. As a matter of fact the five years preceding the one for which the authors' statistics are taken show an actual decline of over 25 per cent. Part III is not enough of an advance beyond the older books to outweigh these shortcomings.

For a place where only one course in geography can be offered this book is the best single text yet available. Where more than one course is offered it can hardly find a place, except in the use of the really excellent Part II for reference reading.

WALTER S. TOWER.

*University of Pennsylvania.*

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**Haney, L. H.** *A Congressional History of Railways in the United States.* Volume II. Pp. 335. Madison, Wis.: Democratic Printing Company, 1910.

In this, the second volume of his congressional history of railways, Dr. Haney considers the period 1850 to 1887. His sources, as in the earlier volume, are the Congressional Globe, Executive Documents, Presidential Messages, and other public documents; and his purpose is to trace the history of railways as shown in the activities of congress, and to trace the activities of congress in so far as they dealt with railways. Mr. Haney pronounces it a "history of action and reaction between railways or railway companies and the government. A congressional history of railways is a study in the activities of our federal government in regard to transportation by rail."

The relations between congress and the railways were twofold,—first "aid" and second "regulation." Book I contains an account of federal land grants, the attempts made by congress to make and enforce stipulations as to the free carriage of troops, mails, etc., by land grant railways, and the

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attempts to modify the duties on railway iron. Since the same sources had been used by previous writers there was little opportunity to add materially to the history of land grants.

Book III deals with regulation. Among the various subjects discussed are the early mail service, the movement to break state monopolies, federal regulation of bridges, the granger movement and congress, live-stock transportation, and early safety regulation. Two chapters deal with the evolution, passage and provisions of the Interstate Commerce Act of 1887. The Cullom Report is referred to as the most influential document in shaping the act, but no further mention is made of it. It would seem that at least as much prominence might have been given to it as to the earlier Windom Report discussed in the chapter on the granger movement.

Book II deals with the relations of congress to the early "Pacific Railways," and in a way connects Books I and III. It contains a handy summary of the land grants and provisions for financial aid as finally made by congress. The discussion of the Union Central Pacific route and the lines comprising the route further south is detailed and contains much interesting congressional data. Detailed mention of the Credit Mobilier Construction Company in congress is doubtless omitted advisedly. A very brief account of the Northern Pacific is added.

Though the period from 1850 to 1887 is hardly covered as thoroughly as is the earlier period, the volume is an addition to the literature on railway history. The laboriously compiled footnote references in themselves offer opportunity for further research.

G. G. HUEBNER.

*University of Pennsylvania.*

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**Holdich, Thomas.** *The Gates of India.* Pp. xv, 525. Price, \$3.25. New York: Macmillan Company, 1910.

Access to India has come to be so exclusively a matter of water routes that any but those who are interested in the problem of protecting India from the northwest are apt to overlook the land routes by which various civilizations have introduced themselves to the peninsula in past ages. Colonel Holdich leads us far back in time as well as far away in distance. He takes us to the land gates of India in the hinterland of the peninsula, Tibet, Afghanistan and Baluchistan, and shows the importance that these have had in affording access to invaders and merchants. Greek, Persian and Assyrian relations with the Indian frontier—the lands west of the Indus—are shown in their dependence upon the travel routes. The chapters dealing with the explorations of Alexander are especially illuminating in the portions which describe the physical characteristics of the country through which he traveled and the difficulties which he must have encountered. The middle portion of the book treats of the less familiar but perhaps even more interesting points of access used by the Chinese from the north and the Arabs from the Makran coast. A very interesting chapter gives a review of mediaeval relations between Europe and India carried on through Seistan and Afghanistan. The

later discussion is drawn from the records of various explorers English, American and French and presents the modern conditions of travel.

Mr. Holdich's work shows the result of his twenty years' intimacy with his subject. He has enriched his narrative with other material in addition to his notes. The book is an excellent summary of the results of the best historical research as well as a testimony to the explorers of the nineteenth century.

CHESTER LLOYD JONES.

*University of Wisconsin.*

**Hopkins, C. G.** *Soil Fertility and Permanent Agriculture.* Pp. xxiii, 653. Price, \$2.75. Boston: Ginn & Co., 1910.

At this time when so much attention is being given to the question of conservation of resources, it is especially gratifying to have an exhaustive discussion of soil fertility, the most important of all resources, from a recognized authority on the subject. The book discusses the problems of agriculture from the scientific standpoint, but for the most part in terms intelligible to the general reader. In some of the early chapters, however, where it is necessary to expound various fundamental principles, the discussions of chemical elements, compounds and reactions are likely to be difficult for the lay mind to follow. Occasionally in other connections, also, items are introduced, as the disputed relations of phosphorus compounds in slag, which are important only to a student of chemistry.

The book is divided into four parts. Part I is devoted to chemical principles, soil formation, composition, analyses, and the relation of various soil elements to plants. Part II, "Systems of Permanent Agriculture," is a discussion of the importance of limestone, phosphorus and nitrogen, crop rotation and live stock farming, to the maintenance of soil fertility so that agriculture may be permanent. Part III is a survey of the soil investigations, crop yields, etc., at various experiment stations. Part IV is a consideration of the "various fertility factors," as fertilizers, natural and manufactured, losses of plant food in different ways, soil testing and the essentials of successful farming. Under this latter head it is interesting to note that business ability is, in the author's estimation, one of the three essentials for success. An appendix gives statistics of agricultural production, locations of agricultural colleges and experiment stations in the United States and Canada, and much other useful information to supplement the text.

The book is a veritable mine of information on the subject of scientific agriculture, and though there may be disagreement over some points, it should be highly commended.

WALTER S. TOWER.

*University of Pennsylvania.*

**Jones, H.** *The Working Faith of the Social Reformer.* Pp. xii, 305. Price, \$2.40. New York: Macmillan Company, 1910.

This is a collection of essays and lectures on social problems, previously published in magazine form. The author is Professor of Moral Philosophy



in the University of Glasgow. Most of the essays were originally written in response to the incitement of some temporary circumstance. Their scholarly type and philosophic treatment give them a value far from temporary. It is the author's conviction throughout that "there is no need so imperative, none from whose fulfilment our social welfare would flow so full and free, as the convincing enunciation of a few principles which have the intrinsic right to be dominant." The purpose running throughout the book is to question the principles involved in our social philosophies, for, as the author maintains, "principles are very powerful, either for mischief or for good. They may appear to be remote from practice; but they are, in truth, the most practical forces of all. They warp our judgment of *all* facts if they are false; they inform our judgment if they are true."

The thirteen essays or lectures group themselves under the following six general titles, *The Working Faith of the Social Reformer*, *The Moral Aspect of the Fiscal Question*, *The Child and Heredity*, *Idealism and Politics*, *Social and Individual Evolution*, and *Social Responsibilities*. The discussions under these divisions vary from philosophic treatises to popular discussions. Of the latter class are four lectures under the caption "*Social Responsibilities*," addresses primarily to the business men of Glasgow. Their tone is eminently sane and conservative.

Of a more philosophic and abstract nature are the essays grouped under the title, "*Idealism and Politics*." Here the author seeks to advance one of those principles, which has the "intrinsic right to be dominant" and of which he feels the need is "so imperative." The author discusses idealism and concludes by showing that "idealism is not in the least unique in that it has taken a spiritual view of human life; it is not from that either its merits or its demerits flow. Its uniqueness lies in the fact that it has endeavored to employ the conception of spirit in the way in which the natural sciences employ *their* dominating hypothesis. It is for it a principle of research in knowledge, and of reform in private and public conduct. Idealism would follow the self-articulation of spirit in the history of beliefs and institutions, even as biology seeks to follow the evolution of natural life from form to form in an ascending series. Its task is only begun. It is no complete theory rounded and finished."

This idealistic philosophy is the characteristic viewpoint of the book. Whether one accept or reject this hypothesis there is much of great value and general interest in the author's presentation of his subject. The style of the lectures is scholarly, the subject matter excellent, and their philosophy well worthy of the careful consideration of all thinkers interested in social reform.

FRANK D. WATSON.

*University of Pennsylvania.*

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**Kennan, G.** *Tent Life in Siberia*. Pp. xv. 482. Price, \$2.50. New York: G. P. Putnam's Sons, 1910.

**Bates, L.** *The Russian Road to China*. Pp. ix, 391. Price, \$3.00. Boston: Houghton, Mifflin Company, 1910.

These books stand at opposite poles of our knowledge of Siberia and its

peoples. Mr. Kennan's story is based on his first trip to Siberia in 1865, an expedition largely of an exploring character though supported by a commercial company which planned a land telegraph to Europe by way of Asia. There was then no thought of international conflict; the imperial designs of Russia seemed to have a free field. Like all stories of adventure the daily experiences have almost a touch of romance.

Though the theme of the story is now forty years old it deals with subjects of contemporary interest. The home life of the natives of the far northeast has changed but little, the characteristics of the country, especially in Eastern Siberia, have been affected by immigration and the railroad only to a slight degree. Aside from the study of the natives, the splendid character of the adventure holds the reader's attention. Cossack weddings, reindeer and dog teams, native folk lore and religion, bear hunts and kindred subjects make the story often approach fiction in its interest.

Mr. Bates' journey emphasizes the present day. He shows us the conditions of travel on the commodious Trans-Siberian railroad where Mr. Kennan describes a five-thousand-mile sledge journey. He pictures the cosmopolitan civilization growing up on the hither and farther sides of Lake Baikal, the great increase of Siberian population and commerce, the international rivalries, the crude civilization of Mongolia, and its unique priesthood. Besides these chapters there are discussions of the place of the Mongals in history, Russian expansion and the place of Russia and China in world politics. The author is evidently in sympathy with the imperial ambitions of the Northern Empire. The books can very profitably be read together, for Mr. Kennan sketches the ground work, the conditions before the opening of the country, and Mr. Bates emphasizes the present day developments.

CHESTER LLOYD JONES.

*University of Wisconsin.*

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**Lingley, C. R.** *The Transition in Virginia from Colony to Commonwealth.*

Pp. 218. New York: Longmans, Green & Co., 1910.

Dr. Lingley has made an interesting and instructive analysis of the evolution of the Virginia Commonwealth, which to an important degree is the evolution of self-government. In his review of the westward migration the study would be more satisfactory were the emigrants from eastern Virginia differentiated more clearly by classes and creeds, since this explains their attitude to the established church and the crown, and their subsequent vigor in supporting the revolutionary movement.

Due emphasis is placed on tobacco as a commodity of commerce as well as the part it played in the controversial period preceding the passage of the Stamp Act. In the chapter dealing with Governor Dunsmore's administration appears a detailed narrative of how Patrick Henry, the fearless advocate of the Dissenters, became a daring leader in the first pre-Revolutionary force-of-arms movement. The tracing of the consolidation of sentiment between the colonies, following Virginia's initial move in appointing a committee of correspondence, is an important part of the contribution.

That the Virginia delegation led in the first Continental Congress is evidenced by the fact that the terms of agreement were practically identical with the resolutions previously passed by the Virginia convention. The guidance and influence of the Virginia delegates in the framing and adoption of the constitution is properly made the subject of careful compilation. The historical citations leave no shadow of doubt as to Thomas Jefferson being the dominant spirit in laying deep and permanent the foundations of democracy.

G. T. SURFACE.

*Yale University.*

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**Martin, W. A.** *Treatise on the Law of Labor Unions.* Pp. xxv, 649  
Washington: John Byrne & Co., 1910.

The growth of combinations both of labor and capital gives to all discussions of the law of labor unions an increasing importance. New questions are continually being presented for judicial settlement because of the changed economic and social conditions. This development is chiefly confined to the last two decades in which period more cases have been decided on this subject than are reported during all the time previous.

Mr. Martin's work applies the elementary principles of the law of torts and conspiracy to questions of labor union law. He hopes thereby to be able to show the line which the courts should follow in their decisions. This gives us an excellent exposition of the present law, but the basis on which it is made is hardly one which will suit the social worker. The language of the author shows that he believes that the basic rules of the law of torts and conspiracy establish "perfect equality before the law" in the relations between the workmen and the capitalist. This, as has been pointed out in many of the recent decisions, is true in theory, but on account of economic conditions, is not true in fact.

Mr. Martin's discussion is however judicial and constructive under the limitations which he sets for himself. He regards many of the present holdings as unjust to organized labor. He believes the courts will finally sustain the right of the workmen to threaten strikes in order to prevent the employment of certain objectionable men; that they will sustain the rights of the unions to use disciplinary measures to compel insubordinate members to join lawful strikes or continue on strike; that they will allow certain sorts of picketing and will refuse to enjoin unions from giving strike pay or expending money for picketing.

There are decisions he regards as unjust to capital. The secondary boycott will ultimately be recognized as illegal. The absolute right of the members of the union to quit work will be denied whenever such action depends on malevolent motives. Any legislation which tends to make legal concerted action in connection with a trade dispute which would otherwise amount to a conspiracy will be annulled.

Three-fourths of the book, as should be the case, are taken up with the

discussion of the law of labor disputes; one-fourth is devoted to the cases on the internal organization of labor unions and the protection of the union label. The leading American and English cases are collated and the appendix gives a valuable series of forms which fit the questions most often arising in connection with labor unions.

*University of Wisconsin.*

CHESTER LLOYD JONES.

**Stephenson, G. T.** *Race Distinction in American Law.* Pp. xv, 388. Price \$1.50. New York: D. Appleton & Co., 1910.

Few people realize how numerous race distinctions are in our statute law. Hitherto it has been difficult to obtain information as to the situation in the various states. In summarizing the legislation and court decisions, therefore, the author has performed a very useful service. He recognizes that law and custom are often at variance and in a few instances he reports his own findings as to facts—for illustration, the extent of jury service by Negroes.

Distinctions and discriminations are very different things and oftentimes only by the former can the latter be avoided. Our law should therefore recognize as may be necessary race distinctions. Such is his philosophy. Practically the study concerns only the laws enacted since 1865 and practically also, in spite of the title, deals only with the Negro.

In covering such large subjects as the "Black Laws," "Marital Relations," "Intermarriage," "Civil Rights," "Separation in Schools," and "Conveyances," "Court Room," "Suffrage," the discussion must necessarily be brief. Citations of law and decisions are given. It is too much to expect entire accuracy. The author may know that in some country districts as well as cities in Pennsylvania Negroes to-day must attend special schools though that is not the impression given by the text. He may know that in some districts of the South the Negroes probably pay in taxes more than is spent on their schools though he suggests only the current and contradictory position. Some such slips or omissions are unavoidable. As a whole the work seems carefully done and should be of great service to students.

CARL KELSEY.

*University of Pennsylvania.*

**White, A. D.** *Seven Great Statesmen.* Pp. xi, 552. Price, \$2.50. New York: The Century Company, 1910.

The statesmen selected by Mr. White for study are Sarpi, Grotius, Thomasius, Turgot, Stein, Cavour and Bismarck. The volume is one of the most interesting and instructive books of the year. The reader would naturally expect a book of high order from the pen of Andrew D. White, and those who have enjoyed and admired his previous works will find the author still possessing his old-time charm. The work of the seven statesmen selected, and its bearing upon the world's history, are presented with exceptional force and clearness. The author's personal acquaintance with Cavour and Bis-

marck gives especial interest to the sketches of those two statesmen. The longest and on the whole most brilliant of the seven essays is that upon Bismarck. The strength and weakness of the builder of the German Empire are strikingly portrayed. Future students of German history will undoubtedly turn to this paper frequently, because of the light it throws upon many controverted questions.

The analysis of the work of Stein is also admirably done. "He was second in point of time, of the three great German statesmen since the Reformation. The first of these was Thomasius, mainly a publicist. . . . In any comparison between the latter two [Stein and Bismarck], the world at large will doubtless award the first place to Bismarck", but Mr. White points out that Bismarck had at his command greater forces and had the support of William I, of Moltke "the greatest soldier since Napoleon," of Roon, "the greatest of army organizers," and finally of "an uprising of German feeling fully equal to that which Stein had done so much to arouse against the Napoleonic tyranny." Mr. White gives Stein a place equal to Bismarck "as regards services to German nationality, superior as regards service to humanity."

The present controversies between the papacy and the governments of Portugal and Spain give added interest to Mr. White's account of the Sarpi's heroic services to Venice in the struggle against Rome; while the recent activities of the International Tribunal at the Hague give timeliness to an estimate of the life and work of Grotius "who thought out for Europe the precepts of right reason in international law."

Not the least among the charms of Mr. White's book is the appeal it will make to the general reader. It will be instructive and entertaining alike to layman and specialist.

EMORY R. JOHNSON.

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**Wright, C. W.** *Wool Growing and the Tariff*. Pp. xiii, 362. Price, \$2.00. Boston: Houghton, Mifflin Company, 1910.

This book contains a careful study of the relation of the American protective system to the wool growing industry. It is to be hoped that this study of one phase of our tariff history will soon be followed by others dealing with other industries. So many generalizations are made to-day in reference to the influence of tariff legislation on industrial development that a concrete study of one industry is to be welcomed by all thoughtful students of the subject.

The author traces the rise of the wool growing industry in the east, its steady progress westward, and its final location in the Far West, where it is to-day in a new position no longer quite able to hold its ground. Throughout the historic treatment, much interesting light is thrown on the general economic conditions of the times. Though the book is primarily on wool growing, the author correctly maintains that its development cannot be properly understood as an isolated phenomenon.

The primary object of the study is to ascertain to just what extent the various changes in our tariff policy have either aided or retarded the development of the industry in question. The author throughout his investigation constantly emphasizes the fact that not *one* but a great variety of influences have at one time or another affected the course of the wool industry, and that the same factor has never been the ruling one for any two successive periods. When it is stated that the development of the industry has been controlled in turn by "the spread of population, the rise of manufactures, the relative changes in the prices of agricultural products and the competition of other farm pursuits, the abnormal conditions of war with its distorting inflation of the currency, the opening of the Far West, and again the greater relative profits in other lines of agriculture," it seems as though the author had left little room for any influence on the part of our past tariffs. This in fact is the author's conclusion. "There was not a single one of the periods into which the history of the period has been divided when we did not find some one influence, or possibly some half-dozen, more potent than the tariff. At best the tariff was of minor importance." Its influence has been only in the field of raising the price of wool above that in the world's market, and thereby somewhat increasing the number of sheep in the country, chiefly since the war, and after the rise of the industry in the Far West. This increase in the number of sheep, the author views as but a relatively small proportion of the total number of sheep. "The assertion, frequently met, that the very existence of the sheep industry of the country depends on the duties finds no substantiation in the facts of history."

"As for the future, there seems at least a chance that the tariff may play a more prominent part than heretofore. Present tendencies point to a decline in sheep-raising as an independent industry mainly for wool. Mutton will increasingly become of first importance, and wool secondary. In the East, where sheep promise to be incidental to general farming, and wool subordinate to mutton, the basis of the industry will be such that the tariff on wool can be of but comparatively slight moment. In the West, which offers far larger possibilities and a more dependent basis, the competition of the foreign grower is likely to become more serious, and there, in the main seat of the industry, protection can do much more for the wool grower. Still in that section also, just so far as mutton becomes the main object in place of wool, to that extent the weight of this foreign rivalry will be lessened, the security of the industry strengthened, and the influence of the tariff diminished."

In the opinion of the author the most far-reaching influences in the various phases of the development of the industry has been the slow sure march of the center of industry from the Atlantic coast to the Far West, following or rather accompanying, the westward movement of settlement and development so characteristic of the American economic history of the nineteenth century. Wool is primarily a "frontier" product. In proportion as a section of a country becomes more densely populated sheep raising for the clip seems to decrease. The land becomes more valuable for other purposes and the available capital seems to find more remunerative channels.

To the book are added several valuable appendices, one of which contains an exhaustive bibliography. The others contain tables largely statistical giving such information as the number of sheep and amount of wool produced in the United States, 1840-1907, etc. In addition there is an index. Throughout the work are to be found many footnotes of value to the more interested reader. Altogether the book is a valuable addition to the literature covering various phases of American economic history.

FRANK D. WATSON.

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